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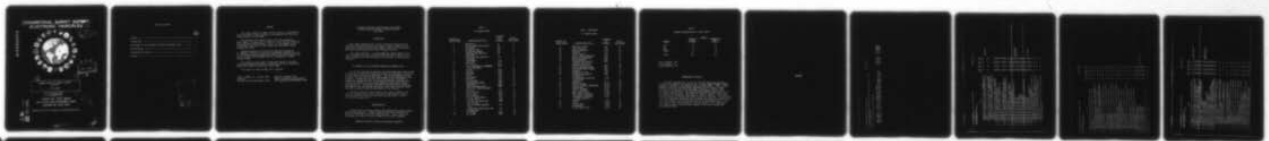

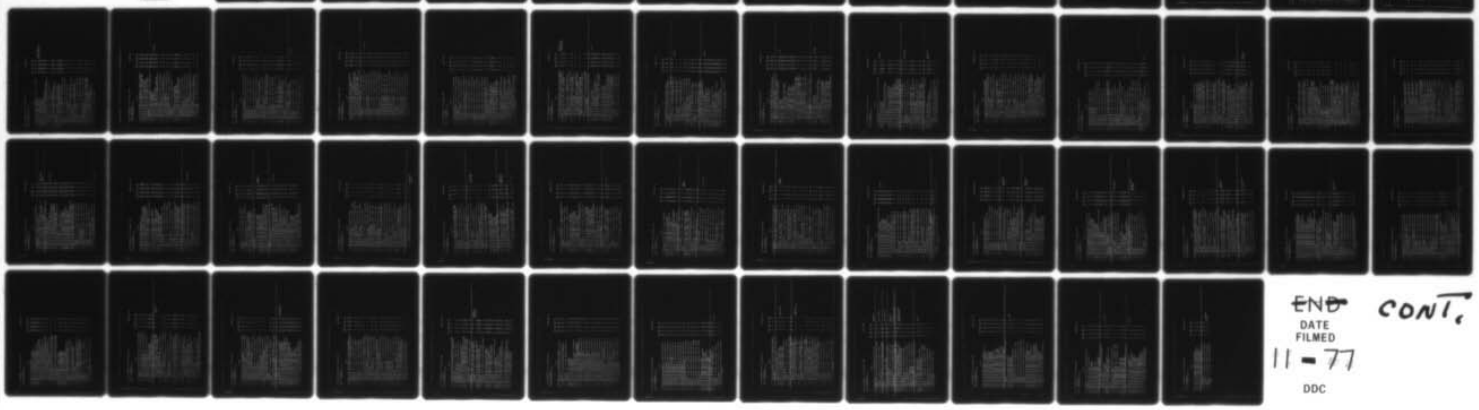

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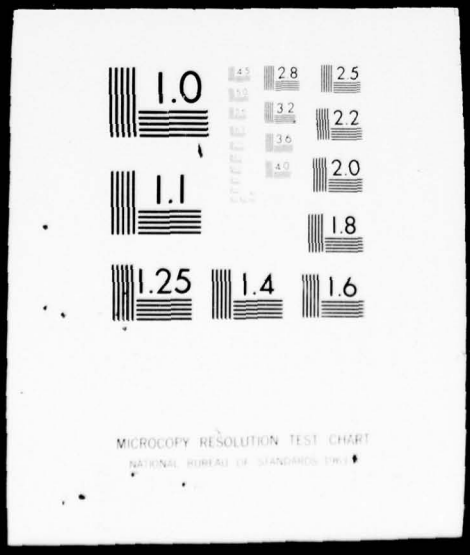

OCCUPATIONAL SURVEY REPORT
ELECTRONIC PRINCIPLES

COMMUNICATIONS ELECTRONICS SYSTEMS
SPECIALIST

AFSC 30456

AFPT-90-304-222
2 September 1977

OCCUPATIONAL SURVEY BRANCH
USAF OCCUPATIONAL MEASUREMENT CENTER
LACKLAND AFB TEXAS 78236

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PREFACE

This report presents a summary of the results of a detailed Air Force Electronic Principles Survey of the Communications Electronics Systems Specialist, AFSC 30456.

The Electronic Principles Inventory (EPI) was developed by Major Thomas J. O'Connor and Mr. Hendrick W. Ruck and the survey data were analyzed by Captain Harold T. Welch. All are members of the Occupational Survey Branch, USAF Occupational Measurement Center, Lackland AFB, Texas.

Computer programs for analyzing the data were designed by Dr. Raymond E. Christal, Occupational and Manpower Research Division, Air Force Human Resources Laboratory (AFHRL), and were written by the Project Analysis and Programming Branch, Computational Sciences Division, AFHRL.

Distribution of this report is made upon request to the USAF Occupational Measurement Center, attention of the Chief, Occupational Survey Branch (OMY), Lackland AFB, Texas 78236.

This report has been reviewed and is approved.

JAMES A. TURNER, JR., Colonel, USAF
Commander
USAF Occupational Measurement Center

WALTER E. DRISKILL, Ph.D.
Chief, Occupational Survey Branch
USAF Occupational Measurement Center

ELECTRONIC PRINCIPLES OCCUPATIONAL SURVEY REPORT
COMMUNICATIONS ELECTRONICS SYSTEMS SPECIALIST
AFSC 30456

INTRODUCTION

This report summarizes the results of the administration of the Electronic Principles Inventory to airmen assigned as Communications Electronics Systems Specialist (AFSC 30456). The data for this report were collected during the period April through June 1977.

This report describes: (1) development and administration of the survey instrument; and (2) electronic principles used by DAFSC 5-skill level personnel both CONUS and overseas and assigned to selected major commands.

DEVELOPMENT OF THE ELECTRONIC PRINCIPLES INVENTORY (EPI)

The EPI was developed by personnel from the Occupational Survey Branch who were well qualified in theoretical physics and electronics, as well as in task analysis and survey development. Over 300 maintenance personnel from SAC, TAC, ADC, MAC, and AFCS participated in the development of the inventory. Representing the five ATC training centers, electronics experts who averaged 12 years of maintenance experience and four years of electronic principles instruction experience spent several weeks refining the EPI. In addition, personnel at the Electrical Engineering Department of the USAF Academy and the Air Force Human Resources Laboratory were consulted during the development of the inventory.

The final version of the EPI used in this survey contained 1,257 items in 62 subject matter areas covering all electronic principles training given at the five ATC technical training centers. Table 1 lists the 62 subject areas.

ADMINISTRATION

The Electronic Principles Inventory was administered by mail to AFSC 30456 airmen worldwide. Responses from 59 individuals represented 40 percent of the total of all AFSC 30456 personnel. Table 2 shows the percentage distribution by major command of the survey incumbents.

TABLE 1

EPI SUBJECT AREAS

SEQUENCE OF SUBJECT AREAS	SUBJECT AREA TITLE	BEGINNING ITEM NUMBER	GPSUM PAGE NUMBER
1	MATHEMATICS	A1	2
2	DIRECT CURRENT AND VOLTAGE	A15	2
3	RESISTANCE	A24	2
4	MULTIMETER USES	B52	3
5	ALTERNATING CURRENT	B61	4
6	INDUCTORS AND INDUCTIVE REACTANCE	B67	4
7	CAPACITORS AND CAPACITIVE REACTANCE	C92	5
8	TRANSFORMERS	C128	6
9	MAGNETISM	C171	7
10	RCL CIRCUITS	D185	8
11	SERIES AND PARALLEL RESONANCE (TIME CONSTANTS)	D229	10
12	FILTERS	D239	10
13	COUPLING	E261	11
14	SOLDERING	E273	11
15	RELAYS	E295	12
16	MICROPHONES	F314	12
17	SPEAKERS	F327	13
18	OSCILLOSCOPES	F342	13
19	SEMICONDUCTOR DIODES	G354	13
20	TRANSISTORS	G404	15
21	TRANSISTOR AMPLIFIERS	G428	16
22	SOLID-STATE SPECIAL PURPOSE DEVICES	H477	19
23	POWER SUPPLIES	H483	19
24	OSCILLATORS	H512	19
25	MULTIVIBRATORS	I539	20
26	LIMITERS AND CLAMPERS	I555	21
27	ELECTRON TUBES	I565	21
28	ELECTRON TUBE AMPLIFIERS AND CIRCUITS	J609	22
29	SPECIAL PURPOSE ELECTRON TUBES	J616	23
30	HETERODYNING, MODULATION, AND DEMODULATION	J632	23
31	AM SYSTEMS	K638	23
32	FM SYSTEMS	K666	24

TABLE 1 (CONTINUED)

EPI SUBJECT AREAS

SEQUENCE OF SUBJECT AREAS	SUBJECT AREA TITLE	BEGINNING ITEM NUMBER	GPSUM PAGE NUMBER
33	NUMBERING SYSTEMS	K685	25
34	LOGIC FUNCTIONS	L695	25
35	BOOLEAN EQUATIONS	L708	26
36	COUNTERS	L733	27
37	TIMING CIRCUITS	M757	27
38	USE OF SIGNAL GENERATORS	M769	28
39	MOTORS AND GENERATORS	M779	28
40	METER MOVEMENTS	N808	29
41	SATURABLE REACTORS AND MAGNETIC AMPLIFIERS	N818	29
42	WAVESHAPING CIRCUITS	N834	30
43	SINGLE SIDEBAND SYSTEMS	O845	30
44	PULSE MODULATION SYSTEMS	O875	31
45	ANTENNAS	O914	32
46	TRANSMISSION LINES	P953	34
47	WAVEGUIDES AND CAVITY RESONATORS	P984	35
48	MICROWAVE AMPLIFIERS AND OSCILLATORS	P1034	37
49	REGISTERS	Q1110	39
50	STORAGE DEVICES	Q1117	40
51	DIGITAL TO ANALOG CONVERTERS	Q1126	40
52	PHANTASTRONS	Q1140	41
53	SCHMITT TRIGGERS	R1141	41
54	CABLE FABRICATION	R1144	41
55	INPUT/OUTPUT DEVICES	S1146	41
56	PHOTO SENSITIVE DEVICES	S1149	41
57	SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)	S1150	41
58	INFRARED	T1159	41
59	LASERS	T1186	42
60	DISPLAY TUBES	T1220	43
61	PROGRAMMING	U1234	43
62	DB AND POWER RATIOS	U1255	44

TABLE 2

COMMAND REPRESENTATION OF SURVEY SAMPLE

	30456	
COMMAND	PERCENT ASSIGNED	PERCENT OF SAMPLE
AFCS	95	86
ATC	5	7
AFSC	0	5
OTHERS	0	2
TOTAL	100	100

Total Assigned - 148
Total Sampled - 59
Percent Sampled - 40%

PRESENTATON OF RESULTS

Personnel responded "yes" or "no" to the 1,257 electronic principles questions as related to their present job. A Group Summary (GPSUM) computer printout is provided in the Appendix portion of this report. Page 1 of the GPSUM lists the four selected groups identified for this report. Pages 2-44 show the percentage of the incumbents responding to the EPI items. The computer program results display the percent members answering "yes" to the subject area questions. The reader can locate a specific subject area by referring to the Appendix page number as listed in Table 1. For example, the Transformers area results are given on page 6 of the GPSUM. The percentage of survey respondents indicating use of specific electronic principles ranged from high in areas such as Multimeter Uses (p. 3) and Soldering (p. 11) to low in areas such as Infrared (pp. 41-42) and Lasers (p. 42). Additional AFSC 30456 data can be obtained upon request to the Chief, Occupational Survey Branch (OMY).

APPENDIX

TABULATION OF ELECTRONIC PRINCIPLES UTILIZATION DATA FOR SELECTED GROUPS
IN THE 30456 CAREER FIELD.

REPORTS ON THE FOLLOWING GROUPS WERE REQUESTED

GROUP IDENTITY = SPC176	ALL AIRMEN DAFSC 30456	CONTAINING	59 MEMBERS.
GROUP IDENTITY = SPC177	ALL AIRMEN DAFSC 30456 STATIONED IN CONUS	CONTAINING	34 MEMBERS.
GROUP IDENTITY = SPC178	ALL AIRMEN DAFSC 30456 STATIONED OVERSEAS	CONTAINING	25 MEMBERS.
GROUP IDENTITY = SPC179	ALL AIRMEN DAFSC 30456 ASSIGNED TO AFCS	CONTAINING	51 MEMBERS.

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
A	1	A1-01 IN YOUR PRESENT JOB, DO YOU USE INSTRUMENTS, SUCH AS METERS OR OSCILLOSCOPES, IN WHICH IT IS NECESSARY TO AMPLIFY OR ATTENUATE VOLTAGE, RESISTANCE, ETC., BY POWERS OF 10.	92	94	88	90	MATHEMATICS
A	2	A1-02 DO YOU USE PUBLICATIONS, SUCH AS A TECHNICAL ORDERS OR MAINTENANCE MANUALS, IN WHICH IT IS NECESSARY FOR YOU TO MULTIPLY OR DIVIDE BY A POWER OF 10 BEFORE YOU CAN APPLY THE INFORMATION FROM THE PUBLICATION IN A USEFUL WAY ON THE JOB.	53	50	56	55	
A	3	A1-03 DO YOU REARRANGE AND SOLVE FORMULAS OR EQUATIONS.	42	44	40	39	
A	4	A1-04 DO YOU CALCULATE THE SQUARE ROOT OF A QUANTITY.	24	18	32	25	
A	5	A1-05 DO YOU SOLVE FOR UNKNOWN QUANTITIES.	32	26	40	35	
A	6	A1-06 DO YOU CONVERT NUMBERS TO LOGARITHMS.	32	18	52	33	
A	7	A1-07 DO YOU USE LOGARITHM TABLES IN ANY TYPE OF CALCULATIONS.	27	18	40	27	
A	8	A1-08 DO YOU SOLVE QUADRATIC EQUATIONS.	10	9	12	10	
A	9	A1-09 DO YOU USE THE NATURAL SYSTEM OF LOGARITHMS.	19	9	32	20	
A	10	A1-10 DO YOU PERFORM CALCULATIONS ON VECTOR QUANTITIES.	20	12	32	22	
A	11	A1-11 DO YOU WORK WITH TRIGONOMETRIC FUNCTIONS SUCH AS SINE, COSINE, OR TANGENT.	24	12	40	29	
A	12	A1-12 DO YOU DETERMINE AREAS OF PLANE FIGURES.	8	6	12	10	
A	13	A1-13 DO YOU SOLVE OR USE SIMULTANEOUS EQUATIONS.	15	12	20	16	
A	14	A1-14 DO YOU SOLVE OR USE PROPORTIONS.	29	21	40	31	
A	15	A2-01 DO YOU USE THE TERM VOLTAGE OR VOLT (V).	97	94	100	98	
A	16	A2-02 DO YOU USE THE TERM ELECTROMOTIVE FORCE (EMF).	49	41	60	51	
A	17	A2-03 DO YOU USE THE TERM OHM.	98	97	100	100	DIRECT CURRENT
A	18	A2-04 DO YOU USE THE TERM ION.	46	41	52	47	AND VOLTAGE
A	19	A2-05 DO YOU USE THE TERM DYNE.	20	18	24	22	
A	20	A2-06 DO YOU USE THE TERM AMPERE.	97	94	100	98	
A	21	A2-07 DO YOU USE THE TERM NEUTRON.	29	29	28	29	
A	22	A2-08 DO YOU USE THE TERM COULOMB.	29	26	32	31	
A	23	A2-09 DO YOU USE THE TERM PROTON.	27	29	24	29	
A	24	A3-01 DO YOU WORK WITH RESISTORS IN YOUR PRESENT JOB.	92	85	100	90	
A	25	A3-02 DO YOU INSPECT RESISTORS.	93	94	92	92	
A	26	A3-03 DO YOU CLEAN RESISTORS.	76	71	84	76	
A	27	A3-04 DO YOU ADJUST RESISTORS.	93	94	92	92	RESISTANCE
A	28	A3-05 DO YOU CHECK OHMIC VALUE OR RESISTORS.	92	88	96	92	
A	29	A3-06 DO YOU REMOVE OR REPLACE RESISTORS.	76	68	88	76	
A	30	A3-07 DO YOU USE OR REFER TO TEMPERATURE COEFFICIENTS FOR RESISTORS ON ANY TASKS YOU PERFORM.	41	35	48	43	
A	31	A3-08 DO YOU USE OR REFER TO RESISTOR SYMBOLS SUCH AS FIXED RESISTOR SYMBOLS OR TAPPED RESISTOR SYMBOLS.	90	85	96	88	
A	32	A3-09 DO YOU IDENTIFY OR CLASSIFY THE RESISTORS YOU WORK WITH AS CARBON, FIXED WIRE, SLIDE TAP, RHEOSTAT, OR POTENTIOMETER.	80	74	88	80	
A	33	A3-10 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE OHMIC VALUE OF RESISTANCE.	88	82	96	88	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSA	SPC 176	SPC 177	SPC 178	SPC 179	
A	34	A3-11 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE TOLERANCE.	83	76	92	84	
A	35	A3-12 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE FAILURE RATE.	27	24	32	27	
A	36	A3-13 DO YOU MAKE DECISIONS IN WHICH YOU MUST DETERMINE HOW TWO OR MORE BATTERIES MUST BE CONNECTED TOGETHER TO ACHIEVE A SPECIFIC VOLTAGE.	37	44	28	39	
A	37	A3-14 DO YOU USE OR REFER TO THE SCHEMATIC SYMBOLS WHICH REPRESENT BATTERIES, FUSES, CONDUCTORS, LAMPS, OR SWITCHES	93	88	100	94	
A	38	A3-15 DO YOU CALCULATE TOTAL RESISTANCE FOR SERIES RESISTIVE CIRCUITS.	56	53	60	59	
A	39	A3-16 DO YOU CALCULATE TOTAL CURRENT FOR SERIES RESISTIVE CIRCUITS.	53	50	56	57	
A	40	A3-17 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR SERIES RESISTIVE CIRCUITS.	56	47	68	61	
A	41	A3-18 DO YOU CALCULATE POWER DISSIPATION FOR SERIES RESISTIVE CIRCUITS.	49	41	60	53	
A	42	A3-19 DO YOU CALCULATE TOTAL RESISTANCE FOR SERIES PARALLEL RESISTIVE CIRCUITS.	53	47	60	55	
A	43	A3-20 DO YOU CALCULATE TOTAL CURRENT FOR SERIES PARALLEL RESISTIVE CIRCUITS.	47	41	56	51	
A	44	A3-21 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR SERIES PARALLEL RESISTIVE CIRCUITS.	49	41	60	53	
A	45	A3-22 DO YOU CALCULATE INDIVIDUAL BRANCH CURRENTS FOR SERIES PARALLEL RESISTIVE CIRCUITS.	46	38	56	49	
A	46	A3-23 DO YOU CALCULATE POWER DISSIPATION FOR SERIES PARALLEL RESISTIVE CIRCUITS.	47	41	56	51	
A	47	A3-24 DO YOU CALCULATE TOTAL RESISTANCE FOR PARALLEL RESISTIVE CIRCUITS.	51	47	56	53	
A	48	A3-25 DO YOU CALCULATE TOTAL CURRENT FOR PARALLEL RESISTIVE CIRCUITS.	51	47	56	53	
A	49	A3-26 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR PARALLEL RESISTIVE CIRCUITS.	49	41	60	53	
A	50	A3-27 DO YOU CALCULATE INDIVIDUAL BRANCH CURRENTS FOR PARALLEL RESISTIVE CIRCUITS.	47	41	56	49	
A	51	A3-28 DO YOU CALCULATE POWER DISSIPATION FOR PARALLEL RESISTIVE CIRCUITS.	47	41	56	51	
B	52	B1-01 DO YOU MEASURE RESISTANCE.	97	94	100	96	
B	53	B1-02 DO YOU REPAIR OHMMETERS.	19	21	16	20	
B	54	B1-03 DO YOU MEASURE VOLTAGE.	98	97	100	98	
B	55	B1-04 DO YOU REPAIR VOLTMETERS.	17	18	16	20	MULTIMETER USES
B	56	B1-05 DO YOU REPAIR AMMETERS.	17	18	16	20	
B	57	B1-06 DO YOU MEASURE CURRENT.	90	88	92	88	
B	58	B1-07 DO YOU USE MULTIMETERS.	98	97	100	98	
B	59	B1-08 DO YOU DIRECTLY USE A QUANTITY OF CHARGE CALLED A COULOMB.	20	21	20	24	
B	60	B1-09 DO YOU READ SCHEMATICS.	98	97	100	98	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

			DY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
B	61	B2-01	DO YOU USE OR REFER TO THE TERM EFFECTIVE VOLTAGE (RMS).	83	85	80	84	
B	62	B2-02	DO YOU USE OR REFER TO THE TERM PEAK TO PEAK VOLTAGE.	90	88	92	90	ALTERNATING CURRENT
B	63	B2-03	DO YOU USE OR REFER TO THE TERM AVERAGE VOLTAGE (DC).	85	82	88	82	
B	64	B2-04	DO YOU USE OR REFER TO THE TERM WAVE LENGTH.	78	79	76	76	
B	65	B2-05	DO YOU USE OR REFER TO THE TERM FREQUENCY.	98	97	100	98	
B	66	B2-06	DO YOU USE OR REFER TO THE TERM INSTANTANEOUS VALUE.	54	47	64	53	
B	67	B3-01	DO YOU WORK WITH INDUCTORS OR CIRCUITS CONTAINING INDUCTORS, CHOKES, OR CHOKE COILS IN YOUR PRESENT JOB.	78	85	68	76	
B	68	B3-02	DO YOU INSPECT INDUCTORS.	71	76	64	69	
B	69	B3-03	DO YOU CLEAN INDUCTORS.	59	62	56	63	INDUCTORS AND INDUCTIVE REACTANCE
B	70	B3-04	DO YOU ADJUST INDUCTORS.	58	65	48	59	
B	71	B3-05	DO YOU REMOVE OR REPLACE INDUCTORS.	61	62	60	61	
B	72	B3-06	DO YOU USE OR REFER TO INDUCTANCE.	61	68	52	65	
B	73	B3-07	DO YOU USE OR REFER TO HENRIES.	49	56	40	49	
B	74	B3-08	DO YOU USE OR REFER TO INDUCTIVE REACTANCE.	47	50	44	51	
B	75	B3-09	DO YOU USE OR REFER TO COPPER LOSS IN INDUCTORS.	17	15	20	18	
B	76	B3-10	DO YOU USE OR REFER TO HYSTERESIS LOSS IN INDUCTORS.	15	15	16	18	
B	77	B3-11	DO YOU USE OR REFER TO EDDY CURRENT LOSS IN INDUCTORS	15	15	16	18	
B	78	B3-12	DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTANCE IS PROPORTIONAL TO THE SQUARE OF THE NUMBER OF TURNS OF THE COIL.	22	21	24	22	
B	79	B3-13	DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE CROSS SECTIONAL AREA OF THE CORE.	15	18	12	16	
B	80	B3-14	DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS INVERSELY PROPORTIONAL TO ITS LENGTH.	17	18	16	18	
B	81	B3-15	DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE PERMEABILITY OF THE CORE MATERIAL.	19	21	16	18	
B	82	B3-16	DO YOU CALCULATE INDUCTANCE FOR PARTICULAR INDUCTORS USING FORMULAS.	17	18	16	20	
B	83	B3-17	DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTANCE IN SERIES.	25	21	32	29	
B	84	B3-18	DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTORS IN PARALLEL.	27	24	32	31	
B	85	B3-19	DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTORS IN SERIES-PARALLEL CIRCUITS.	25	18	36	29	
B	86	B3-20	DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LAGS VOLTAGE IN AC INDUCTOR CIRCUITS.	37	41	32	43	
B	87	B3-21	DO YOU CALCULATE INDUCTIVE REACTANCE.	27	24	32	31	
B	88	B3-22	DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTIVE REACTANCE IS DIRECTLY PROPORTIONAL TO FREQUENCY.	29	32	24	33	
B	89	B3-23	DO YOU WORK WITH POWER INDUCTORS.	46	50	40	49	
B	90	B3-24	DO YOU WORK WITH AUDIO FREQUENCY INDUCTORS.	59	65	52	61	
B	91	B3-25	DO YOU WORK WITH RADIO FREQUENCY INDUCTORS.	64	71	56	65	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
C	92	C1-01 DO YOU WORK WITH CAPACITORS OR CIRCUITS CONTAINING CAPACITORS IN YOUR PRESENT JOB.	86	88	84	84	
C	93	C1-02 DO YOU INSPECT CAPACITORS.	88	91	84	86	CAPACITORS AND CAPACITIVE REACTANCE
C	94	C1-03 DO YOU CLEAN CAPACITORS.	64	65	64	65	
C	95	C1-04 DO YOU ADJUST CAPACITORS.	83	88	76	80	
C	96	C1-05 DO YOU TEST CAPACITORS.	73	76	68	76	
C	97	C1-06 DO YOU DISCHARGE CAPACITORS.	80	79	80	84	
C	98	C1-07 DO YOU REMOVE OR REPLACE CAPACITORS.	78	76	80	82	
C	99	C1-08 DO YOU USE OR REFER TO DISTRIBUTED CAPACITANCE.	31	32	28	35	
C	100	C1-09 DO YOU USE OR REFER TO ORBITAL STRESS OF ELECTRONS IN A DIELECTRIC.	12	15	8	14	
C	101	C1-10 DO YOU USE OR REFER TO FARADS, MICROFARADS, OR PICOFARADS.	83	82	84	80	
C	102	C1-11 DO YOU USE OR REFER TO CAPACITANCE.	90	91	88	88	
C	103	C1-12 DO YOU USE OR REFER TO DIELECTRIC CONSTANT	24	24	24	27	
C	104	C1-13 DO YOU USE OR REFER TO WORKING VOLTAGE RATING OF CAPACITORS	63	53	76	69	
C	105	C1-14 DO YOU USE OR REFER TO CAPACITIVE REACTANCE	47	53	40	49	
C	106	C1-15 DO YOU USE OR REFER TO CAPACITOR COLOR CODES	37	35	40	35	
C	107	C1-16 DO YOU WORK WITH CAPACITORS IN DC CIRCUITS	86	85	88	90	
C	108	C1-17 DO YOU WORK WITH CAPACITORS IN AC CIRCUITS	88	88	88	90	
C	109	C1-18 DO YOU WORK WITH CAPACITORS IN CIRCUITS WITH BOTH DC AND AC	86	85	88	88	
C	110	C1-19 DO YOU WORK WITH CAPACITORS IN DON'T REMEMBER WHICH CIRCUITS	20	24	16	18	
C	111	C1-20 DO YOU CALCULATE CAPACITANCE FOR PARTICULAR CAPACITORS USING FORMULAS	19	21	16	22	
C	112	C1-21 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITANCE OF A CAPACITOR IS DIRECTLY PROPORTIONAL TO THE DIELECTRIC CONSTANT	19	18	20	20	
C	113	C1-22 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITANCE OF A CAPACITOR IS INVERSELY PROPORTIONAL TO THE DIELECTRIC THICKNESS	22	21	24	24	
C	114	C1-23 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN SERIES	31	26	36	35	
C	115	C1-24 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN PARALLEL	31	26	36	35	
C	116	C1-25 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN SERIES-PARALLEL CIRCUITS	32	26	40	37	
C	117	C1-26 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT DOES NOT FLOW THROUGH CAPACITORS, IT ONLY APPEARS TO DO SO	44	41	48	45	
C	118	C1-27 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LEADS VOLTAGE IN AC CAPACITOR CIRCUITS	42	47	36	47	
C	119	C1-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITIVE REACTANCE IS INVERSELY PROPORTIONAL TO FREQUENCY	34	38	28	37	
C	120	C1-29 DO YOU CALCULATE CAPACITIVE REACTANCE	29	32	24	33	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
C 121	C1-30	DO YOU WORK WITH ROTOR-STATOR (VARIABLE) CAPACITORS	73	76	68	75	
C 122	C1-31	DO YOU WORK WITH COMPRESSION (TRIMMER) CAPACITORS	59	59	60	65	
C 123	C1-32	DO YOU WORK WITH ELECTROLYTIC (FIXED) CAPACITORS	80	76	84	80	
C 124	C1-33	DO YOU WORK WITH PAPER (FIXED) CAPACITORS	68	68	68	71	
C 125	C1-34	DO YOU WORK WITH MICA (FIXED) CAPACITORS	73	71	76	75	
C 126	C1-35	DO YOU WORK WITH CERAMIC (FIXED) CAPACITORS	78	76	80	78	
C 127	C1-36	DO YOU WORK WITH DON'T REMEMBER WHICH TYPE OF CAPACITORS	25	26	24	25	
C 128	C2-01	DO YOU WORK WITH TRANSFORMERS IN YOUR PRESENT JOB	80	82	76	78	
C 129	C2-02	DO YOU INSPECT TRANSFORMERS	83	85	80	82	
C 130	C2-03	DO YOU CLEAN TRANSFORMERS	71	76	64	73	
C 131	C2-04	DO YOU ADJUST TRANSFORMERS	59	59	60	61	TRANSFORMERS
C 132	C2-05	DO YOU TROUBLESHOOT TRANSFORMERS	71	76	64	73	
C 133	C2-06	DO YOU REMOVE OR REPLACE COMPLETE TRANSFORMERS	76	74	80	80	
C 134	C2-07	DO YOU REMOVE OR REPLACE TRANSFORMER PARTS, SUCH AS THE PRIMARY WINDING	10	12	8	12	
C 135	C2-08	DO YOU MAKE A DISTINCTION BETWEEN MUTUAL INDUCTION AND MUTUAL INDUCTANCE (M)	14	18	8	14	
C 136	C2-09	DO YOU USE THE SYMBOL FOR MUTUAL INDUCTANCE, M	10	12	8	12	
C 137	C2-10	DO YOU REFER TO OR USE THE COEFFICIENT OF COUPLING WHEN WORKING WITH TRANSFORMERS	19	21	16	22	
C 138	C2-11	DO YOU CALCULATE TURNS RATIOS FOR TRANSFORMERS USING CURRENT OR VOLTAGE RATIOS	20	18	24	24	
C 139	C2-12	DO YOU REFER TO REFLECTED IMPEDANCE WHEN WORKING WITH TRANSFORMERS	17	21	12	18	
C 140	C2-13	DO YOU CALCULATE IMPEDANCE INTERACTIONS FOR TRANSFORMERS	15	12	20	18	
C 141	C2-14	DO YOU WORK WITH AUTOTRANSFORMERS	54	44	68	61	
C 142	C2-15	DO YOU WORK WITH POWER TRANSFORMERS	80	82	76	82	
C 143	C2-16	DO YOU WORK WITH AUDIO TRANSFORMERS	75	74	76	76	
C 144	C2-17	DO YOU WORK WITH RADIO FREQUENCY TRANSFORMERS	73	74	72	75	
C 145	C2-18	DO YOU WORK WITH DON'T REMEMBER WHAT TYPE OF TRANSFORMERS	12	18	4	10	
C 146	C2-19	DO YOU CHECK TRANSFORMERS FOR OPEN WINDINGS BY MEASURING RESISTANCE	69	76	60	71	
C 147	C2-20	DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY MEASURING RESISTANCE	68	76	56	69	
C 148	C2-21	DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY MEASURING OUTPUT VOLTAGES	63	65	60	67	
C 149	C2-22	DO YOU MEASURE RESISTANCE OF TRANSFORMER WINDINGS TO DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN TURNS RATIO	34	38	28	35	
C 150	C2-23	DO YOU MEASURE OUTPUT VOLTAGE OF TRANSFORMERS TO DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN TURNS RATIO	34	38	32	37	
C 151	C2-24	DO YOU REFER TO BASIC TRANSFORMER SCHEMATIC SYMBOLS FOR TRANSFORMERS	86	88	84	88	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
C 152	C2-25 DO YOU REFER TO MULTIPLE SECONDARY-WINDINGS SCHEMATIC SYMBOLS FOR TRANSFORMERS	69	68	72	71	
C 153	C2-26 DO YOU REFER TO MULTIPLE TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS	78	76	80	80	
C 154	C2-27 DO YOU REFER TO CENTER TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS	78	76	80	80	
C 155	C2-28 DO YOU REFER TO AIR CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS	63	68	56	65	
C 156	C2-29 DO YOU REFER TO IRON CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS	64	68	60	67	
C 157	C2-30 DO YOU REFER TO COMBINATIONS OF THE ABOVE SCHEMATIC SYMBOLS FOR TRANSFORMERS	63	71	52	63	
C 158	C2-31 DO YOU DETERMINE PHASE RELATIONSHIPS BETWEEN SECONDARY AND PRIMARY VOLTAGES OF TRANSFORMERS USING SCHEMATIC SYMBOLS	42	41	44	47	
C 159	C2-32 DO YOU DETERMINE OR REFER TO THE TYPE OF CORE IN TRANSFORMERS YOU WORK WITH	32	35	28	37	
C 160	C2-33 DO YOU REFER TO OR USE THE GENERAL RULE THAT THE TURNS RATIO OF A TRANSFORMER IS EQUAL TO THE VOLTAGE RATIO	29	29	28	31	
C 161	C2-34 DO YOU USE OR REFER TO STEP-UP OR STEP-DOWN RATIOS FOR TRANSFORMERS	41	44	36	43	
C 162	C2-35 DO YOU CALCULATE VOLTAGE RATIOS FOR TRANSFORMERS USING TURNS RATIOS	20	15	28	24	
C 163	C2-36 DO YOU CALCULATE CURRENT RATIOS FOR TRANSFORMERS USING TURNS RATIOS	17	12	24	20	
C 164	C2-37 DOES YOUR JOB INVOLVE ANY TASKS DEALING WITH THREE PHASE TRANSFORMERS	66	68	64	69	
C 165	C2-38 DO YOU INSPECT THREE PHASE TRANSFORMERS	58	53	64	63	
C 166	C2-39 DO YOU CLEAN OR LUBRICATE THREE PHASE TRANSFORMERS	37	44	28	41	
C 167	C2-40 DO YOU ADJUST THREE PHASE TRANSFORMERS	39	41	36	43	
C 168	C2-41 DO YOU TROUBLESHOOT THREE PHASE TRANSFORMERS	51	47	56	57	
C 169	C2-42 DO YOU REMOVE OR REPLACE COMPLETE THREE PHASE TRANSFORMERS	54	50	60	59	
C 170	C2-43 DO YOU REMOVE OR REPLACE THREE PHASE TRANSFORMER PARTS SUCH AS WINDINGS	10	15	4	12	
C 171	C3-01 DO YOU USE OR REFER TO PERMANENT MAGNETS	41	41	40	41	
C 172	C3-02 DO YOU USE OR REFER TO TEMPORARY MAGNETS	39	35	44	41	
C 173	C3-03 DO YOU USE OR REFER TO RETENTIVITY OF MAGNETIC MATERIALS	12	12	12	14	MAGNETISM
C 174	C3-04 DO YOU USE OR REFER TO RELUCTANCE OF MAGNETIC MATERIALS	12	12	12	14	
C 175	C3-05 DO YOU USE OR REFER TO PERMEABILITY OF MAGNETIC MATERIALS	15	15	16	16	
C 176	C3-06 DO YOU USE OR REFER TO RESIDUAL MAGNETISM	14	16	12	14	
C 177	C3-07 DO YOU USE OR REFER TO MAGNETIC LINES OF FORCE OR FLUX	31	26	36	31	
C 178	C3-08 DO YOU USE OR REFER TO WEBER'S THEORY OF MAGNETISM	10	9	12	12	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
C 179	C3-09	DO YOU USE OR REFER TO DOMAIN THEORY OF MAGNETISM	14	12	16	16	
C 180	C3-10	DO YOU USE OR REFER TO MAGNETIC INDUCTION	29	32	24	31	
C 181	C3-11	DO YOU USE OR REFER TO FLUX DENSITY	20	24	16	22	
C 182	C3-12	DO YOU USE OR REFER TO THE GENERAL RULE THAT FOR MAGNETIC POLES, LIKE POLES REPEL AND UNLIKE POLES ATTRACT	34	41	24	39	
C 183	C3-13	DO YOU USE THE LEFT HAND THUMB RULE TO FIND THE DIRECTION OF MAGNETIC FIELDS ABOUT STRAIGHT WIRES	32	35	28	33	
C 184	C3-14	DO YOU USE THE LEFT HAND THUMB RULE TO FIND THE NORTH POLE OF A CURRENT CARRYING COIL	32	32	32	31	
D 185	D1-01	DO YOU WORK WITH RC, LR, RCL CIRCUITS IN YOUR PRESENT JOB	59	65	52	61	
D 186	D1-02	DO YOU USE OR REFER TO VECTORS WHEN WORKING WITH RCL CIRCUITS	17	18	16	20	RCL CIRCUITS
D 187	D1-03	DO YOU USE OR REFER TO PYTHAGOREAN THEOREM WHEN WORKING WITH RCL CIRCUITS	14	9	20	16	
D 188	D1-04	DO YOU USE OR REFER TO SINE WHEN WORKING WITH RCL CIRCUITS	17	15	20	20	
D 189	D1-05	DO YOU USE OR REFER TO COSINE WHEN WORKING WITH RCL CIRCUITS	17	15	20	20	
D 190	D1-06	DO YOU USE OR REFER TO TANGENT WHEN WORKING WITH RCL CIRCUITS	14	12	16	16	
D 191	D1-07	DO YOU USE OR REFER TO WATTS WHEN WORKING WITH RCL CIRCUITS	64	71	56	69	
D 192	D1-08	DO YOU USE OR REFER TO TRUE POWER (PT) WHEN WORKING WITH RCL CIRCUITS	42	41	44	47	
D 193	D1-09	DO YOU USE OR REFER TO MAXIMUM POWER (PM) WHEN WORKING WITH RCL CIRCUITS	44	50	36	49	
D 194	D1-10	DO YOU USE OR REFER TO AVERAGE POWER (PAVE) WHEN WORKING WITH RCL CIRCUITS	47	50	44	51	
D 195	D1-11	DO YOU USE OR REFER TO APPARENT POWER (PA) WHEN WORKING WITH RCL CIRCUITS	41	47	32	45	
D 196	D1-12	DO YOU USE OR REFER TO POWER FACTOR (PF) WHEN WORKING WITH RCL CIRCUITS	32	38	24	37	
D 197	D1-13	DO YOU USE OR REFER TO RESONANT CIRCUITS WHEN WORKING WITH RCL CIRCUITS	53	56	48	57	
D 198	D1-14	DO YOU USE OR REFER TO BANDWIDTH WHEN WORKING WITH RCL CIRCUITS	66	74	56	69	
D 199	D1-15	DO YOU USE OR REFER TO SELECTIVITY WHEN WORKING WITH RCL CIRCUITS	59	68	48	65	
D 200	D1-16	DO YOU USE OR REFER TO RESONANT FREQUENCY WHEN WORKING WITH RCL CIRCUITS	54	56	52	59	
D 201	D1-17	DO YOU USE OR REFER TO HALF POWER POINTS WHEN WORKING WITH RCL CIRCUITS	41	38	44	47	
D 202	D1-18	DO YOU USE OR REFER TO BANDPASS REGION WHEN WORKING WITH RCL CIRCUITS	51	50	52	55	
D 203	D1-19	DO YOU USE OR REFER TO CIRCUIT Q WHEN WORKING WITH RCL CIRCUITS	32	32	32	37	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 176	SPC 177	SPC 178	SPC 179
D 204	DI-20 DO YOU USE OR REFER TO TANK CIRCUITS WHEN WORKING WITH RCL CIRCUITS	46	50	40	49
D 205	DI-21 DO YOU DETERMINE VALUES OF TRIGONOMETRIC FUNCTIONS USING FORMULAS	15	15	16	18
D 206	DI-22 DO YOU DRAW VOLTAGE, CURRENT, OR IMPEDANCE VECTOR DIAGRAMS FOR CIRCUITS	12	12	12	14
D 207	DI-23 DO YOU CALCULATE TOTAL IMPEDANCE FOR CAPACITIVE CIRCUITS	22	21	24	25
D 208	DI-24 DO YOU CALCULATE PHASE ANGLES BETWEEN IMPEDANCE AND RESISTANCE IN CAPACITIVE CIRCUITS	15	12	20	18
D 209	DI-25 DO YOU CALCULATE TOTAL IMPEDANCE FOR SERIES RCL CIRCUITS	19	15	24	22
D 210	DI-26 DO YOU CALCULATE IMPEDANCE ANGLES FOR SERIES RCL CIRCUITS	10	15	4	12
D 211	DI-27 DO YOU CALCULATE APPARENT POWER (PA) FOR SERIES RCL CIRCUITS	15	15	16	18
D 212	DI-28 DO YOU CALCULATE TRUE POWER (PT) FOR SERIES RCL CIRCUITS	20	15	28	24
D 213	DI-29 DO YOU CALCULATE POWER FACTORS (PF) FOR SERIES RCL CIRCUITS	19	15	24	22
D 214	DI-30 DO YOU CALCULATE TOTAL CURRENT FOR PARALLEL RCL CIRCUITS	20	15	28	24
D 215	DI-31 DO YOU CALCULATE IMPEDANCE ANGLES FOR PARALLEL RCL CIRCUITS	12	15	8	14
D 216	DI-32 DO YOU CALCULATE TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS USING THE ASSUMED VOLTAGE METHOD	17	15	20	20
D 217	DI-33 DO YOU CALCULATE TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS USING OHM'S LAW	20	15	28	24
D 218	DI-34 DO YOU CHECK CAPACITORS USING OHMMETERS	58	62	52	61
D 219	DI-35 DO YOU CHECK CAPACITORS USING SUBSTITUTION	44	47	40	47
D 220	DI-36 DO YOU CHECK INDUCTORS USING OHMMETERS	56	62	48	59
D 221	DI-37 DO YOU CHECK INDUCTORS USING SUBSTITUTION	44	47	40	47
D 222	DI-38 DO YOU USE OR REFER TO THE GENERAL RULE THAT THETA= 0, PF = 1, AND PA = PT FOR RESONANT CIRCUITS	12	9	16	14
D 223	DI-39 DO YOU CALCULATE RESONANT FREQUENCIES FOR RCL CIRCUITS	19	15	24	22
D 224	DI-40 DO YOU USE OR REFER TO THE GENERAL RULE THAT IMPEDANCE IS MINIMUM AND CURRENT MAXIMUM AT THE RESONANT FREQUENCY FOR SERIES RCL CIRCUITS	24	26	20	27
D 225	DI-41 DO YOU USE OR REFER TO THE GENERAL RULE THAT LINE CURRENT IS MINIMUM AND IMPEDANCE MAXIMUM AT RESONANT FREQUENCY FOR PARALLEL RCL CIRCUITS	22	21	24	25
D 226	DI-42 DO YOU USE OR REFER TO THE GENERAL RULE THAT HALF POWER POINTS ARE AT 70.7 PERCENT OF THE PEAK CURRENT VALUE	39	32	48	41
D 227	DI-43 DO YOU USE OR REFER TO THE GENERAL RULE THAT BANDWIDTH IS INVERSELY PROPORTIONAL TO Q	31	29	32	33
D 228	DI-44 DO YOU DETERMINE HOW CHANGES IN FREQUENCY, RESISTANCE, CAPACITANCE, OR INDUCTANCE WILL AFFECT CURRENT OR PHASE ANGLES FOR RCL CIRCUITS	20	18	24	24

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
D 229	D2-01 IN YOUR PRESENT JOB, DO YOU WORK WITH, USE, OR REFER TO SERIES OR PARALLEL RESONANT CIRCUITS OR TIME CONSTANTS	37	32	44	41	SERIES AND PARALLEL RESONANCE (TIME CONSTANTS)
D 230	D2-02 DO YOU WORK WITH, USE, OR REFER TO TIME CONSTANTS	27	21	36	31	
D 231	D2-03 DO YOU WORK WITH, USE, OR REFER TO AVAILABLE VOLTAGE	20	18	24	24	
D 232	D3-04 DO YOU WORK WITH, USE, OR REFER TO TRANSIENT INTERVALS	17	18	16	20	
D 233	D2-05 DO YOU USE OR REFER TO THE GENERAL RULE THAT A CAPACITOR IS FULLY CHARGED (OR DISCHARGED) AFTER FIVE (5) TIME CONSTANTS (TC)	27	15	44	31	
D 234	D2-06 DO YOU USE OR REFER TO UNIVERSAL TIME CONSTANT CHARTS	14	15	12	16	
D 235	D2-07 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE CIRCUIT CURRENT OR COMPONENT VOLTAGES AFTER A SPECIFIC TIME FOR RC OR LR CIRCUITS	12	9	16	14	
D 236	D2-08 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE THE TIME REQUIRED FOR CIRCUIT CURRENT OR COMPONENT VOLTAGES TO REACH SPECIFIC VALUES FOR RC OR LR CIRCUITS	12	9	16	14	
D 237	D2-09 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE COMPONENT VALUES REQUIRED FOR CIRCUIT CURRENT AND COMPONENT VOLTAGES TO REACH SPECIFIC VALUES IN SPECIFIC TIMES	12	9	16	14	
D 238	D2-10 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT IN LR CIRCUITS REACHES ITS MINIMUM VALUE (OR ZERO) AFTER FIVE (5) TIME CONSTANTS	15	9	24	18	
D 239	D3-01 DO YOU WORK WITH CIRCUITS USED AS FILTERS IN YOUR PRESENT JOB	81	76	88	86	
D 240	D3-02 DO YOU INSPECT FILTER CIRCUITS	68	68	68	71	FILTERS
D 241	D3-03 DO YOU CLEAN FILTER CIRCUITS	63	68	56	65	
D 242	D3-04 DO YOU ALIGN OR ADJUST FILTER CIRCUITS	66	71	60	69	
D 243	D3-05 DO YOU TROUBLESHOOT TO THE FILTER CIRCUIT LEVEL	54	59	48	59	
D 244	D3-06 DO YOU TROUBLESHOOT TO COMPONENT PARTS	36	41	28	37	
D 245	D3-07 DO YOU REMOVE OR REPLACE THE COMPLETE FILTER CIRCUIT	73	71	76	78	
D 246	D3-08 DO YOU REMOVE OR REPLACE FILTER CIRCUIT COMPONENT PARTS	32	41	20	35	
D 247	D3-09 DO YOU WORK WITH LOW PASS FILTERS	76	71	84	78	
D 248	D3-10 DO YOU WORK WITH HIGH PASS FILTERS	76	71	84	78	
D 249	D3-11 DO YOU WORK WITH BANDPASS FILTERS	81	76	68	84	
D 250	D3-12 DO YOU WORK WITH BAND-REJECT FILTERS	73	65	84	76	
D 251	D3-13 DON'T REMEMBER WHICH TYPE OF FILTER YOU WORK WITH	15	24	0	16	
D 252	D3-14 DO YOU WORK WITH L-SECTION FILTER CONFIGURATION	44	44	44	47	
D 253	D3-15 DO YOU WORK WITH T-SECTION FILTER CONFIGURATION	42	41	44	47	
D 254	D3-16 DO YOU WORK WITH PI-SECTION FILTER CONFIGURATION	37	35	40	41	
D 255	D3-17 DON'T REMEMBER WHICH TYPE FILTER CONFIGURATION	32	38	24	33	
D 256	D3-18 DO THE FILTERS YOU WORK WITH USE PARALLEL RESONANT CIRCUITS	47	44	52	53	
D 257	D3-19 DO THE FILTERS YOU WORK WITH USE SERIES-PARALLEL CIRCUITS	44	44	44	49	
D 258	D3-20 DO THE FILTERS YOU WORK WITH USE SERIES RESONANT CIRCUITS	49	44	56	53	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DUTIES	SPC 176	SPC 177	SPC 178	SPC 179	
U 259	D3-21	DON'T REMEMBER WHICH TYPE OF BASIC CIRCUIT	32	41	20	33	
U 260	D3-22	DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE CAPACITANCE OR INDUCTANCE VALUES REQUIRED FOR SPECIFIC FILTERS	15	12	20	18	
E 261	E1-01	DO YOU WORK WITH COUPLING DEVICES IN YOUR PRESENT JOB	68	71	64	69	
E 262	E1-02	DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH RC COUPLING	59	56	64	63	COUPLING
E 263	E1-03	DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH IMPEDANCE COUPLING	54	53	56	57	
E 264	E1-04	DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH TRANSFORMER COUPLING	63	62	64	67	
E 265	E1-05	DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM RC COUPLING	53	50	56	57	
E 266	E1-06	DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM IMPEDANCE COUPLING	51	53	48	51	
E 267	E1-07	DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM TRANSFORMER COUPLING	56	56	56	59	
E 268	E1-08	DO YOU WORK WITH DIRECTLY COUPLED CIRCUITS	49	50	48	53	
E 269	E1-09	DO YOU WORK WITH CAPACITIVE-RESISTIVE COUPLED CIRCUITS	51	50	52	55	
E 270	E1-10	DO YOU WORK WITH CAPACITIVE-INDUCTIVE COUPLED CIRCUITS	54	53	56	59	
E 271	E1-11	DO YOU WORK WITH TRANSFORMER COUPLED CIRCUITS	58	56	60	61	
E 272	E1-12	DON'T REMEMBER WHICH TYPE OF COUPLING CIRCUITS	20	29	8	20	
E 273	E2-01	IN YOUR PRESENT JOB, DO YOU PERFORM SOLDERING TECHNIQUES OR INSPECT OR EVALUATE SOLDERED CONNECTIONS	92	91	92	92	
E 274	E2-02	DO YOU SELECT TYPE OF SOLDER TO USE	78	76	80	76	SOLDERING
E 275	E2-03	DO YOU ADD FLUX TO CONNECTIONS	75	74	76	73	
E 276	E2-04	DO YOU CLEAN CONNECTIONS USING SOLVENTS	80	79	80	82	
E 277	E2-05	DO YOU STRIP INSULATION FROM WIRES	93	91	96	92	
E 278	E2-06	DO YOU CONNECT OR DISCONNECT HEAT SINKS	90	88	92	88	
E 279	E2-07	DO YOU BEND OR SHAPE WIRES OR LEADS	95	94	96	94	
E 280	E2-08	DO YOU CUT WIRES	93	91	96	92	
E 281	E2-09	DO YOU FILE OR SHAPE SOLDERING IRON TIPS	85	82	88	84	
E 282	E2-10	DO YOU TIN SOLDERING IRON TIPS	92	91	92	94	
E 283	E2-11	DO YOU CLEAN SOLDERING IRON TIPS	95	94	96	94	
E 284	E2-12	DO YOU CLEAN ELECTRICAL SURFACES USING ERASERS	83	79	88	84	
E 285	E2-13	DO YOU TIN OR PRE-TIN CONDUCTORS	83	79	88	82	
E 286	E2-14	DO YOU INSPECT SOLDERED CONNECTIONS	95	94	96	94	
E 287	E2-15	DO YOU DESOLDER CONNECTIONS BY WICKING	76	76	76	75	
E 288	E2-16	DO YOU DESOLDER CONNECTIONS USING VACUUM DESOLDERING TOOLS	71	59	88	75	
E 289	E2-17	DO YOU CUT COMPONENT LEADS TO REMOVE COMPONENTS	61	68	52	63	
E 290	E2-18	DO YOU CRUSH COMPONENTS FOR REMOVAL	22	32	8	25	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
E 291	E2-19	DO YOU MAKE HARDWIRE CONNECTIONS	93	94	92	92	
E 292	E2-20	DO YOU MAKE PRINTED CIRCUIT BOARD CONNECTIONS	71	71	72	76	
E 293	E2-21	DO YOU SOLDER PASSIVE COMPONENTS SUCH AS RESISTORS OR CAPACITORS ON PRINTED CIRCUIT BOARDS	66	68	64	69	
E 294	E2-22	DO YOU SOLDER ACTIVE COMPONENTS SUCH AS SOLID-STATE DIODES OR TRANSISTORS ON PRINTED CIRCUIT BOARDS	68	71	64	71	
E 295	E3-01	DO YOU WORK WITH RELAYS ON YOUR PRESENT JOB	92	88	96	92	
E 296	E3-02	DO YOU ADJUST RELAYS	53	56	48	53	RELAYS
E 297	E3-03	DO YOU CLEAN RELAYS	75	79	68	75	
E 298	E3-04	DO YOU INSPECT RELAYS	88	88	88	86	
E 299	E3-05	DO YOU REMOVE OR REPLACE COMPLETE RELAYS	93	91	96	92	
E 300	E3-06	DO YOU REMOVE OR REPLACE PARTS OR RELAYS	20	24	16	22	
E 301	E3-07	DO YOU TROUBLESHOOT RELAYS	76	74	80	78	
E 302	E3-08	DO YOU STRAIGHTEN RELAY CONTACTS	56	56	56	57	
E 303	E3-09	DO YOU PERFORM TASKS ON RELAY CONTACTS	53	47	60	57	
E 304	E3-10	DO YOU PERFORM TASKS ON RELAY CORES	15	21	8	16	
E 305	E3-11	DO YOU PERFORM TASKS ON RELAY COILS	20	21	20	22	
E 306	E3-12	DO YOU PERFORM TASKS ON RELAY ARMATURES	22	24	20	20	
E 307	E3-13	DO YOU PERFORM TASKS ON RELAY SPRINGS	25	24	28	25	
E 308	E3-14	DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY OPER (NO) SCHEMATIC SYMBOLS FOR RELAYS	76	74	80	78	
E 309	E3-15	DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY CLOSED (NC) SCHEMATIC SYMBOLS FOR RELAYS	76	74	80	78	
E 310	E3-16	DO YOU USE OR REFER TO SINGLE POLE, DOUBLE THROW (SPDT) SCHEMATIC SYMBOLS FOR RELAYS	75	74	76	76	
E 311	E3-17	DO YOU USE OR REFER TO DOUBLE POLE, DOUBLE THROW (DPDT) SCHEMATIC SYMBOLS FOR RELAYS	75	74	76	76	
E 312	E3-18	DO YOU USE OR REFER TO OTHER RELAY SYMBOLS SCHEMATIC SYMBOLS FOR RELAYS	75	71	80	78	
E 313	E3-19	DO YOU CHECK ELECTRICAL CONTINUITY OF COILS BY MEASURING RESISTANCE	73	71	76	75	
E 314	F1-01	IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH MICROPHONES	59	56	64	65	
E 315	F1-02	DO YOU INSPECT MICROPHONES	46	47	44	49	
E 316	F1-03	DO YOU CLEAN MICROPHONES	39	38	40	41	MICROPHONES
E 317	F1-04	DO YOU OPERATE MICROPHONES	59	56	64	65	
E 318	F1-05	DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS BUT DO NOT TROUBLESHOOT DOWN TO COMPONENT PARTS OR MICROPHONES	51	53	48	57	
E 319	F1-06	DO YOU TROUBLESHOOT DOWN TO MICROPHONE PARTS	20	24	16	22	
E 320	F1-07	DO YOU REMOVE OR REPLACE COMPLETE MICROPHONES	51	50	52	57	
E 321	F1-08	DO YOU REMOVE OR REPLACE MICROPHONE PARTS	17	21	12	18	
E 322	F1-09	DO YOU PERFORM TASKS ON CARBON MICROPHONES	37	44	28	41	
E 323	F1-10	DO YOU PERFORM TASKS ON CAPACITOR MICROPHONES	14	12	16	14	
E 324	F1-11	DO YOU PERFORM TASKS ON CRYSTAL MICROPHONES	12	9	16	12	
E 325	F1-12	DO YOU PERFORM TASKS ON DYNAMIC MICROPHONES	22	21	24	24	
E 326	F1-13	DO YOU PERFORM TASKS ON VELOCITY RIBBON MICROPHONES	3	6	0	2	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
F	327	F2-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH SPEAKERS	73	71	76	73	SPEAKERS
F	328	F2-02 DO YOU INSPECT SPEAKERS	58	56	60	57	
F	329	F2-03 DO YOU CLEAN SPEAKERS	46	44	48	47	
F	330	F2-04 DO YOU OPERATE SPEAKERS	66	62	72	67	
F	331	F2-05 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS BUT DO NOT TROUBLESHOOT DOWN TO COMPONENT PARTS OF SPEAKERS	59	56	64	61	
F	332	F2-06 DO YOU TROUBLESHOOT DOWN TO SPEAKER PARTS	19	18	20	20	
F	333	F2-07 DO YOU REMOVE OR REPLACE COMPLETE SPEAKERS	59	56	64	61	
F	334	F2-08 DO YOU REMOVE OR REPLACE SPEAKER PARTS	15	18	12	16	
F	335	F2-09 DO YOU PERFORM ANY TASKS ON SPEAKER CONES	14	12	16	14	
F	336	F2-10 DO YOU PERFORM ANY TASKS ON SPEAKER SPIDERS	5	9	0	4	
F	337	F2-11 DO YOU PERFORM ANY TASKS ON SPEAKER FIELD COILS	7	4	4	6	
F	338	F2-12 DO YOU PERFORM ANY TASKS ON SPEAKER VOICE COILS	8	9	8	8	
F	339	F2-13 DO YOU PERFORM ANY TASKS ON SPEAKER PERMANENT MAGNETS	8	9	8	8	
F	340	F2-14 DO YOU PERFORM ANY TASKS ON SPEAKER ELECTROMAGNETS	8	9	8	8	
F	341	F2-15 DO YOU PERFORM ANY TASKS ON SPEAKER SOFT IRON CORES	7	9	4	6	
F	342	F3-01 DO YOU USE OSCILLOSCOPES IN YOUR PRESENT JOB	97	94	100	96	
F	343	F3-02 DO YOU USE OSCILLOSCOPES TO PERFORM OPERATIONAL CHECKS	93	94	92	92	OSCILLOSCOPES
F	344	F3-03 DO YOU USE OSCILLOSCOPES TO PERFORM ALIGNMENTS OR ADJUSTMENTS	93	91	96	96	
F	345	F3-04 DO YOU USE OSCILLOSCOPES TO TROUBLESHOOT ELECTRONIC CIRCUITS	86	82	92	90	
F	346	F3-05 DO YOU USE OSCILLOSCOPES TO MEASURE FREQUENCY	85	82	88	86	
F	347	F3-06 DO YOU USE OSCILLOSCOPES TO MEASURE TIME	73	71	76	75	
F	348	F3-07 DO YOU USE OSCILLOSCOPES TO OBSERVE LISAJOUS PATTERNS	51	56	44	53	
F	349	F3-08 DO YOU USE OSCILLOSCOPES TO OBSERVE SIGNALS WHILE UTILIZING ATTENUATOR PROBES	84	85	88	86	
F	350	F3-09 DO YOU USE OSCILLOSCOPES TO MAKE FREQUENCY OR TIME MEASUREMENTS USING DELAY TIME MULTIPLIERS	42	44	40	43	
F	351	F3-10 DO YOU USE OSCILLOSCOPES TO MEASURE AC VOLTAGE	81	79	84	82	
F	352	F3-11 DO YOU USE OSCILLOSCOPES TO MEASURE OR OBSERVE SIGNALS AFTER FIRST ADJUSTING THE GAIN AND DC BAL CONTROLS	78	74	84	80	
F	353	F3-12 DO YOU USE OSCILLOSCOPES TO MEASURE DC VOLTAGE	86	85	88	88	
G	354	G1-01 DO YOU WORK WITH SEMICONDUCTOR DIODES IN YOUR PRESENT JOB	80	76	84	78	
G	355	G1-02 DO YOU INSPECT DIODES	71	74	68	73	SEMICONDUCTOR DIODES
G	356	G1-03 DO YOU REMOVE OR REPLACE DIODES	66	68	64	71	
G	357	G1-04 DO YOU CHECK DIODES USING AN INSTRUMENT	66	65	68	69	
G	358	G1-05 DO YOU USE ENERGY LEVEL DIAGRAMS IN YOUR WORK WITH DIODES	17	18	16	20	
G	359	G1-06 DO YOU USE PN JUNCTION DIODE CHARACTERISTIC CURVES, TOGETHER WITH VALUES OF FORWARD AND REVERSE BIAS VOLTAGE, TO COMPUTE FORWARD OR REVERSE BIAS RESISTANCE	17	21	12	18	
G	360	G1-07 DO YOU COMPUTE FORWARD OR REVERSE BIAS RESISTANCE FOR DIODES	25	24	28	27	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179
G 361	G1-08	DO YOU USE OR REFER TO THE GENERAL RULE THAT TEMPERATURE CAN AFFECT THE OPERATION OF DIODES	58	56	60	57
G 362	G1-09	DO YOU IDENTIFY SEMICONDUCTOR DIODES AS OPPOSED TO OTHER ELECTRONIC COMPONENTS, SUCH AS RESISTORS, BASED ON THEIR PHYSICAL APPEARANCE	66	62	72	67
G 363	G1-10	DO YOU REFER TO OR DO YOU DETERMINE THE GENERAL EFFECTS OF DOPING ON CURRENT FLOW	25	26	24	25
G 364	G1-11	DO YOU USE OR REFER TO MEASUREMENTS OF FORWARD BIAS RESISTANCE	49	50	48	53
G 365	G1-12	DO YOU USE OR REFER TO DIODE COLOR CODING	31	29	32	27
G 366	G1-13	DO YOU USE OR REFER TO CENTRIFUGAL FORCE OF AN ELECTRON IN ORBIT AROUND A NUCLEUS	10	9	12	12
G 367	G1-14	DO YOU USE OR REFER TO CENTRIPETAL FORCE OF AN ELECTRON IN ORBIT AROUND A NUCLEUS	10	9	12	12
G 368	G1-15	DO YOU USE OR REFER TO DIODE NUMBERING SYSTEM, SUCH AS IN 538	51	47	56	53
G 369	G1-16	DO YOU USE OR REFER TO KINETIC ENERGY OF AN ELECTRON MOVING IN ORBIT	8	9	8	10
G 370	G1-17	DO YOU USE OR REFER TO POTENTIAL ENERGY OF AN ELECTRON MOVING IN ORBIT	8	9	8	10
G 371	G1-18	DO YOU USE OR REFER TO MEASUREMENTS OF REVERSE BIAS RESISTANCE	46	44	48	49
G 372	G1-19	DO YOU USE OR REFER TO NUMBER OF ELECTRONS IN A PARTICULAR SHELL OR ORBIT	12	12	12	14
G 373	G1-20	DO YOU USE OR REFER TO PERMISSIBLE ENERGY LEVELS OF AN ORBITING ELECTRON	10	12	8	12
G 374	G1-21	DO YOU USE OR REFER TO FORBIDDEN ENERGY LEVELS OF AN ORBITING ELECTRON	10	12	8	12
G 375	G1-22	DO YOU USE OR REFER TO VALENCE ELECTRONS (THOSE IN THE OUTERMOST SHELL)	12	12	12	14
G 376	G1-23	DO YOU USE OR REFER TO ATOMIC NUMBER (TOTAL NUMBER OF ELECTRONS IN ATOM)	12	12	12	14
G 377	G1-24	DO YOU USE OR REFER TO SYMBOLS ON THE DIODE WHICH INDICATE THE CATHODE END	64	62	68	65
G 378	G1-25	DO YOU NEED TO KNOW WHICH MATERIALS ARE USED IN THE CONSTRUCTION OF DIODES SUCH AS GERMANIUM OR SILICON	31	32	28	33
G 379	G1-26	DO YOU NEED TO KNOW THAT SEMICONDUCTORS HAVE NEGATIVE TEMPERATURE COEFFICIENTS OF RESISTANCE (AS TEMPERATURE INCREASES RESISTANCE DECREASES)	32	29	36	31
G 380	G1-27	DO YOU USE OR REFER TO PN JUNCTION DIODE CHARACTERISTIC CURVES, SUCH AS VOLTAGE - CURRENT CHARACTERISTIC CURVES (PERHAPS YOU DO THIS TO IDENTIFY POINTS OF STRUCTURAL BREAKDOWN OR OPERATING REGIONS)	22	21	24	24
G 381	G1-28	DO YOU DETERMINE WHETHER PN JUNCTION DIODES ARE FORWARD BIASED OR REVERSE BIASED WHEN YOU READ OR INTERPRET CIRCUIT DIAGRAMS	56	53	60	55
G 382	G1-29	DO YOU USE OR REFER TO VALENCE BAND IN SEMICONDUCTOR MATERIALS	12	9	16	14

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
G 383	G1-30	DO YOU USE OR REFER TO FORBIDDEN BAND IN SEMICONDUCTOR MATERIALS	8	9	8	10	
G 384	G1-31	DO YOU USE OR REFER TO CONDUCTION BAND IN SEMICONDUCTOR MATERIALS	10	9	12	12	
G 385	G1-32	DO YOU USE OR REFER TO COVALENT BONDING IN SEMICONDUCTOR MATERIALS	12	9	16	14	
G 386	G1-33	DO YOU USE OR REFER TO ELECTRON-HOLE PAIR CREATED IN SEMICONDUCTORS	15	15	16	16	
G 387	G1-34	DO YOU USE OR REFER TO ELECTRON FLOW OR HOLE FLOW IN SEMICONDUCTORS	22	18	28	24	
G 388	G1-35	DO YOU USE OR REFER TO DONOR IMPURITY IN SEMICONDUCTORS	14	15	16	18	
G 389	G1-36	DO YOU USE OR REFER TO ACCEPTOR IMPURITY IN SEMICONDUCTORS	15	15	16	18	
G 390	G1-37	DO YOU USE OR REFER TO P-TYPE SEMICONDUCTOR MATERIAL	34	32	36	37	
G 391	G1-38	DO YOU USE OR REFER TO N-TYPE SEMICONDUCTOR MATERIAL	34	32	36	37	
G 392	G1-39	DO YOU USE OR REFER TO MAJORITY CARRIERS IN SEMICONDUCTORS	17	15	20	20	
G 393	G1-40	DO YOU USE OR REFER TO MINORITY CARRIERS IN SEMICONDUCTORS	17	15	20	20	
G 394	G1-41	DO YOU USE OR REFER TO JUNCTION RECOMBINATION IN SEMICONDUCTORS	14	12	16	16	
G 395	G1-42	DO YOU USE OR REFER TO DEPLETION REGION IN SEMICONDUCTORS	19	18	20	22	
G 396	G1-43	DO YOU USE OR REFER TO RELATIONSHIP BETWEEN BARRIER WIDTH AND DIFFERENCE OF POTENTIAL	15	15	16	18	
G 397	G1-44	DO YOU USE OR REFER TO THE 10:1 BACK TO FRONT RESISTANCE RATIO FOR DIODES	36	29	44	35	
G 398	G1-45	DO YOU USE OR REFER TO BARRIER HEIGHT IN SEMICONDUCTORS	10	9	12	12	
G 399	G1-46	DO YOU USE OR REFER TO DIODE SUBSTITUTION INFORMATION	41	41	40	41	
G 400	G1-47	DO YOU USE OR REFER TO MAXIMUM AVERAGE FORWARD CURRENT DIODE RATINGS	34	26	44	37	
G 401	G1-48	DO YOU USE OR REFER TO PEAK RECURRENT FORWARD CURRENT DIODE RATINGS	29	26	32	31	
G 402	G1-49	DO YOU USE OR REFER TO MAXIMUM SURGE CURRENT DIODE RATINGS	34	29	40	37	
G 403	G1-50	DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGE DIODE RATINGS	37	32	44	41	
G 404	G2-01	DO YOU WORK WITH TRANSISTORS IN YOUR PRESENT JOB.	73	71	76	73	
G 405	G2-02	DO YOU INSPECT TRANSISTORS	69	68	72	69	
G 406	G2-03	DO YOU REMOVE OR REPLACE TRANSISTORS	63	59	68	65	
G 407	G2-04	DO YOU CHECK TRANSISTORS USING AN INSTRUMENT	64	62	68	67	TRANSISTORS
G 408	G2-05	DO YOU USE OR REFER TO EMITTER - BASE (EB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS	56	53	60	57	
G 409	G2-06	DO YOU USE OR REFER TO COLLECTOR - BASE (CB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS	58	53	64	59	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
G 410	G2-07 DO YOU USE OR REFER TO EMITTER - COLLECTOR (EC) RESISTANCE MEASUREMENTS	56	53	60	57	
G 411	G2-08 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE PHYSICAL BARRIER WIDTH OF THE EMITTER - BASE JUNCTION	29	26	32	31	
G 412	G2-09 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE PHYSICAL BARRIER WIDTH OF THE COLLECTOR - BASE JUNCTION	29	26	32	31	
G 413	G2-10 DO YOU USE OR REFER TO THE PHYSICAL SIZE OF THE TRANSISTOR STRUCTURE (COLLECTOR, BASE AND EMITTER)	49	41	60	53	
G 414	G2-11 DO YOU USE OR REFER TO LEAKAGE CURRENT (ICBO) IN A TRANSISTOR	27	32	20	31	
G 415	G2-12 DO YOU USE OR REFER TO TRANSISTOR SCHEMATIC SYMBOLS	73	68	80	73	
G 416	G2-13 DO YOU USE OR REFER TO TRANSISTOR NOTATION SUCH AS Q1, Q2, Q3, ETC	71	65	80	71	
G 417	G2-14 DO YOU USE OR REFER TO TRANSISTOR SUBSTITUTION INFORMATION	47	53	40	51	
G 418	G2-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE TRANSISTOR BASE CURRENT I_B IS NORMALLY SIGNIFICANTLY SMALLER THAN THE EMITTER CURRENT IE (USUALLY IB BEING 2 TO 8 PERCENT OF IE)	36	41	28	41	
G 419	G2-16 DO YOU USE THE INFORMATION THAT THE EFFECT OF EMITTER BASE VOLTAGE ON BASE CURRENT IS THE CONTROLLING FACTOR FOR TRANSISTORS	41	41	40	45	
G 420	G2-17 DO YOU USE THE GENERAL RULE THAT LEAKAGE CURRENT (ICBO) IN A TRANSISTOR INCREASES AS TEMPERATURE INCREASES	29	35	20	33	
G 421	G2-18 DO YOU USE OR REFER TO TRANSISTOR CHARACTERISTIC CURVES	24	29	16	25	
G 422	G2-19 DO YOU USE OR REFER TO BETA TRANSISTOR GAINS	15	12	20	18	
G 423	G2-20 DO YOU USE OR REFER TO ALPHA TRANSISTOR GAINS	12	12	12	14	
G 424	G2-21 DO YOU USE OR REFER TO GAMMA TRANSISTOR GAINS	12	12	12	14	
G 425	G2-22 DO YOU CALCULATE BETA TRANSISTOR GAINS	8	6	12	10	
G 426	G2-23 DO YOU CALCULATE ALPHA TRANSISTOR GAINS	8	6	12	10	
G 427	G2-24 DO YOU CALCULATE GAMMA TRANSISTOR GAINS	8	6	12	10	
G 428	G3-01 DO YOU WORK WITH TRANSISTOR AMPLIFIERS IN YOUR PRESENT JOB	71	71	72	73	
G 429	G3-02 DO YOU INSPECT TRANSISTOR AMPLIFIERS	68	68	68	69	
G 430	G3-03 DO YOU ALIGN OR ADJUST TRANSISTOR AMPLIFIERS	69	68	72	71	
G 431	G3-04 DO YOU TROUBLESHOOT TO THE AMPLIFIER CIRCUIT LEVEL	63	62	64	65	
G 432	G3-05 DO YOU TROUBLESHOOT TO AMPLIFIER COMPONENTS	53	53	52	55	
G 433	G3-06 DO YOU REMOVE OR REPLACE THE COMPLETE AMPLIFIER	68	65	72	71	TRANSISTOR AMPLIFIERS
G 434	G3-07 DO YOU REMOVE OR REPLACE AMPLIFIER COMPONENTS	41	38	44	43	
G 435	G3-08 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN COLLECTOR CURRENT WHICH RESULTS FROM A CHANGE IN BASE CURRENT	20	26	12	24	
G 436	G3-09 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN COLLECTOR CURRENT WHICH RESULTS FROM A SPECIFIC CHANGE IN BASE CURRENT	19	24	12	22	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179
G 437	G3-10	DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN COLLECTOR VOLTAGE WHICH RESULTS FROM A CHANGE IN BASE CURRENT	24	29	16	27
G 438	G3-11	DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN COLLECTOR VOLTAGE WHICH RESULTS FROM A SPECIFIC CHANGE IN BASE CURRENT	22	26	16	22
G 439	G3-12	DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN BASE CURRENT WHICH RESULTS FROM AN INPUT SIGNAL	24	32	12	24
G 440	G3-13	DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN BASE CURRENT WHICH RESULTS FROM A SPECIFIC INPUT SIGNAL	19	24	12	20
G 441	G3-14	DO YOU USE THE LOAD-LINE METHOD OF ANALYSIS IN YOUR CIRCUIT ANALYSIS (THIS METHOD REQUIRES YOU TO PLOT A LOAD-LINE ON A TRANSISTOR CHARACTERISTIC CURVE)	15	21	8	18
G 442	G3-15	DO YOU USE OR REFER TO THE OPERATING POINT Q (QUIESCENT POINT) FOR A TRANSISTOR	19	24	12	22
G 443	G3-16	DO YOU CALCULATE THE SPECIFIC QUIESCENT POINT FOR A PARTICULAR TRANSISTOR	12	15	8	14
G 444	G3-17	DO YOU MEASURE VOLTAGE GAIN USED IN THE COMMON EMITTER CONFIGURATION	49	53	44	49
G 445	G3-18	DO YOU MEASURE CURRENT GAIN USED IN THE COMMON EMITTER CONFIGURATION	42	44	40	43
G 446	G3-19	DO YOU MEASURE POWER GAIN USED IN THE COMMON EMITTER CONFIGURATION	46	44	48	47
G 447	G3-20	DO YOU CALCULATE THE VOLTAGE GAIN FOR SPECIFIC TRANSISTORS USING A FORMULA THAT IS, DO YOU DIVIDE THE CHANGE IN BASE-EMITTER VOLTAGE INTO THE CHANGE THE BASE COLLECTOR VOLTAGE TO DETERMINE THE VOLTAGE GAIN	10	12	8	12
G 448	G3-21	DO YOU CALCULATE THE CURRENT GAIN FOR SPECIFIC TRANSISTORS USING A FORMULA THAT IS, DO YOU DIVIDE THE CHANGE IN BASE CURRENT INTO THE CHANGE IN COLLECTOR CURRENT TO DETERMINE THE CURRENT GAIN	10	12	8	12
G 449	G3-22	DO YOU CALCULATE THE POWER GAIN FOR A SPECIFIC TRANSISTOR USING A FORMULA THAT IS, DO YOU MULTIPLY THE CURRENT GAIN TIMES THE VOLTAGE GAIN TO DETERMINE THE POWER GAIN	15	18	12	18
G 450	G3-23	DO YOU NEED TO KNOW THAT MORE COLLECTOR CURRENT IS GENERATED WITH LESS COLLECTOR VOLTAGE AS TEMPERATURE INCREASES (THIS AFFECTS THE STATIC OPERATING POINT [Q] OF THE TRANSISTOR)	19	24	12	20
G 451	G3-24	DO YOU COMPUTE THE STATIC OPERATING POINT [Q] OF A TRANSISTOR AT DIFFERENT TEMPERATURES	10	12	8	12
G 452	G3-25	DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH EMITTER (SWAMPING) RESISTOR STABILIZATION	29	32	24	29
G 453	G3-26	DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH SELF-BIAS STABILIZATION	29	32	24	29

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 176	SPC 177	SPC 178	SPC 179
G	454	G3-27 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH THERMISTOR STABILIZATION	27	32	20	27
G	455	G3-28 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH FORWARD BIAS DIODE STABILIZATION	31	32	28	31
G	456	G3-29 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH REVERSE BIAS DIODE STABILIZATION	31	32	28	31
G	457	G3-30 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH DOUBLE DIODE STABILIZATION	27	35	16	27
G	458	G3-31 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM EMITTER (SWAMPING) RESISTOR STABILIZATION	29	26	32	31
G	459	G3-32 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM SELF-BIAS STABILIZATION	29	26	32	31
G	460	G3-33 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM THERMISTOR STABILIZATION	31	26	36	31
G	461	G3-34 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM FORWARD BIAS DIODE STABILIZATION	32	26	40	33
G	462	G3-35 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM REVERSE BIAS DIODE STABILIZATION	32	26	40	33
G	463	G3-36 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM DOUBLE DIODE STABILIZATION	27	29	24	29
G	464	G3-37 DO YOU IDENTIFY AMPLITUDE DISTORTION FOR TRANSISTOR CIRCUITS	31	24	40	35
G	465	G3-38 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF AMPLITUDE DISTORTION	31	32	28	33
G	466	G3-39 DO YOU IDENTIFY FREQUENCY DISTORTION FOR TRANSISTOR CIRCUITS	39	32	48	41
G	467	G3-40 DO YOU IDENTIFY PHASE DISTORTION FOR TRANSISTOR CIRCUITS	34	35	32	35
G	468	G3-41 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF PHASE DISTORTION	27	26	28	27
G	469	G3-42 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF FREQUENCY DISTORTION	34	26	44	35
G	470	G3-43 DO YOU NEED TO KNOW THE DEGENERATIVE EFFECTS ON THE CIRCUIT CAUSED BY CHANGING EMITTER RESISTANCE FOR TRANSISTOR AMPLIFIERS IN THE COMMON COLLECTOR CONFIGURATION	19	24	12	20
G	471	G3-44 DO YOU DETERMINE THE CLASS OF OPERATION FOR AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER CIRCUITS	29	32	24	31
G	472	G3-45 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS	22	18	28	24
G	473	G3-46 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS	54	53	56	59
G	474	G3-47 DO YOU TROUBLESHOOT OR REPAIR COMPLEMENTARY SYMMETRY CIRCUITS	34	24	48	37
G	475	G3-48 DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED AMPLIFIERS	34	32	36	37

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
S	476	G3-49 DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED AMPLIFIERS	39	38	40	43	
M	477	M1-01 DO YOU USE OR REFER TO VARACTORS	63	53	76	69	
M	478	M1-02 DO YOU USE OR REFER TO TUNNEL DIODES	64	62	68	67	
M	479	M1-03 DO YOU USE OR REFER TO FIELD EFFECT TRANSISTORS (FET)	56	56	56	61	SOLID-STATE
M	480	M1-04 DO YOU USE OR REFER TO UNIJUNCTION TRANSISTORS	44	44	44	49	SPECIAL PURPOSE
M	481	M1-05 DO YOU USE OR REFER TO ZENER DIODES	76	74	80	76	DEVICES
M	482	M1-06 DO YOU USE OR REFER TO INTEGRATED CIRCUITS	81	82	80	80	
M	483	M2-01 IN YOUR PRESENT JOB, DO YOU WORK WITH POWER SUPPLIES	97	97	96	96	
M	484	M2-02 DO YOU INSPECT POWER SUPPLIES	95	97	92	94	
M	485	M2-03 DO YOU CLEAN POWER SUPPLIES	81	85	76	80	
M	486	M2-04 DO YOU ALIGN OR ADJUST POWER SUPPLIES	93	97	88	92	
M	487	M2-05 DO YOU TROUBLESHOOT TO POWER SUPPLY CIRCUIT LEVEL	86	88	84	86	POWER SUPPLIES
M	488	M2-06 DO YOU TROUBLESHOOT TO POWER SUPPLY COMPONENTS	59	59	60	61	
M	489	M2-07 DO YOU REMOVE OR REPLACE COMPLETE POWER SUPPLIES	93	97	88	92	
M	490	M2-08 DO YOU REMOVE OR REPLACE POWER SUPPLY COMPONENTS	51	50	52	55	
M	491	M2-09 DO YOU WORK WITH HALF-WAVE RECTIFIERS	54	62	44	59	
M	492	M2-10 DO YOU WORK WITH FULL-WAVE RECTIFIERS OTHER THAN BRIDGE RECTIFIERS	66	68	64	73	
M	493	M2-11 DO YOU WORK WITH BRIDGE RECTIFIERS	68	62	76	73	
M	494	M2-12 DO YOU WORK WITH THREE-PHASE RECTIFIERS	63	59	68	65	
M	495	M2-13 DO YOU USE OR REFER TO INPUT VOLTAGE	71	65	80	71	
M	496	M2-14 DO YOU USE OR REFER TO INPUT FREQUENCY	66	62	72	67	
M	497	M2-15 DO YOU USE OR REFER TO PEAK OUTPUT VOLTAGE	61	65	56	61	
M	498	M2-16 DO YOU USE OR REFER TO AVERAGE OUTPUT VOLTAGE	64	62	68	65	
M	499	M2-17 DO YOU USE OR REFER TO RIPPLE AMPLITUDE	61	62	60	63	
M	500	M2-18 DO YOU USE OR REFER TO RIPPLE FREQUENCY	51	50	52	53	
M	501	M2-19 DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGE	37	41	32	41	
M	502	M2-20 DO YOU USE OR REFER TO SHAPE OF OUTPUT WAVEFORMS	66	62	72	71	
M	503	M2-21 DO YOU USE OR REFER TO EFFECTIVE OUTPUT VOLTAGE	68	68	68	71	
M	504	M2-22 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE FILTERS	68	74	60	73	
M	505	M2-23 DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE FILTERS	64	71	56	69	
M	506	M2-24 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE INPUT L-TYPE FILTERS	49	59	36	53	
M	507	M2-25 DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE INPUT L-TYPE FILTERS	49	56	40	53	
M	508	M2-26 DO YOU WORK WITH CIRCUITS WHICH EMPLOY LC PI-TYPE FILTERS	49	53	44	53	
M	509	M2-27 DO YOU WORK WITH CIRCUITS WHICH EMPLOY RC PI-TYPE FILTERS	47	53	40	51	
M	510	M2-28 DO YOU WORK WITH CIRCUITS WHICH EMPLOY DON'T REMEMBER WHICH TYPE OF FILTER	54	65	40	51	
M	511	M2-29 DO YOU HAVE THE OPTION OF REPLACING ONE TYPE OF FILTER WITH A DIFFERENT TYPE FILTER	12	15	8	12	
M	512	M3-01 DO YOU WORK WITH OSCILLATORS IN YOUR PRESENT JOB	88	88	88	88	OSCILLATORS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
H 513	H3-02	DO YOU INSPECT OSCILLATORS	80	76	84	78	
H 514	H3-03	DO YOU ALIGN OR ADJUST OSCILLATORS	88	88	88	88	
H 515	H3-04	DO YOU REMOVE OR REPLACE COMPLETE OSCILLATORS	86	82	92	88	
H 516	H3-05	DO YOU REMOVE OR REPLACE OSCILLATOR COMPONENTS	31	35	24	33	
H 517	H3-06	DO YOU TROUBLESHOOT TO OSCILLATOR CIRCUIT LEVEL	73	71	76	75	
H 518	H3-07	DO YOU TROUBLESHOOT TO OSCILLATOR COMPONENTS	27	26	28	29	
H 519	H3-08	DO YOU USE OR REFER TO FEEDBACK	58	59	56	61	
H 520	H3-09	DO YOU USE OR REFER TO FREQUENCY DETERMINING DEVICES (FDD)	61	59	64	61	
H 521	H3-10	DO YOU USE OR REFER TO AMPLITUDE STABILITY	64	62	68	67	
H 522	H3-11	DO YOU USE OR REFER TO FREQUENCY STABILITY	75	74	76	76	
H 523	H3-12	DO YOU USE OR REFER TO DAMPING	32	32	32	33	
H 524	H3-13	DO YOU USE OR REFER TO REGENERATIVE FEEDBACK	53	53	52	55	
H 525	H3-14	DO YOU USE OR REFER TO PIEZOELECTRIC EFFECT	24	29	16	25	
H 526	H3-15	DO YOU USE OR REFER TO CRITICAL DAMPING	22	21	24	22	
H 527	H3-16	DO YOU USE OR REFER TO UNDER DAMPING	22	21	24	24	
H 528	H3-17	DO YOU USE OR REFER TO OVER DAMPING	22	21	24	24	
H 529	H3-18	DO YOU WORK WITH OSCILLATORS WHICH USE LC TANK CIRCUITS AS FDD	47	50	44	51	
H 530	H3-19	DO YOU WORK WITH OSCILLATORS WHICH USE RC NETWORKS AS FDD	51	56	44	53	
H 531	H3-20	DO YOU WORK WITH OSCILLATORS WHICH USE CRYSTALS AS FDD	73	74	72	71	
H 532	H3-21	DO YOU WORK WITH OSCILLATORS WHICH USE DON'T REMEMBER WHICH TYPE OF FDD	31	32	28	33	
H 533	H3-22	DO YOU WORK WITH SERIES HARTLEY SINUSOIDAL OSCILLATORS	29	32	24	29	
H 534	H3-23	DO YOU WORK WITH SHUNT HARTLEY SINUSOIDAL OSCILLATORS	27	29	24	29	
H 535	H3-24	DO YOU WORK WITH COLPITTS SINUSOIDAL OSCILLATORS	27	29	24	29	
H 536	H3-25	DO YOU WORK WITH CLAPP SINUSOIDAL OSCILLATORS	24	26	20	25	
H 537	H3-26	DO YOU WORK WITH BUTLER SINUSOIDAL OSCILLATORS	27	29	24	29	
H 538	H3-27	DO YOU WORK WITH DON'T REMEMBER WHICH TYPE OF OSCILLATORS	61	71	48	63	
I 539	I1-01	DO YOU WORK WITH MULTIVIBRATORS IN YOUR PRESENT JOB	47	47	48	49	
I 540	I1-02	DO YOU INSPECT WAVE GENERATING OR SHAPING CIRCUITS	39	38	40	41	
I 541	I1-03	DO YOU ALIGN OR ADJUST WAVE GENERATING OR SHAPING CIRCUITS	41	41	40	43	
I 542	I1-04	DO YOU CALIBRATE WAVE GENERATING OR SHAPING CIRCUITS	31	26	36	33	MULTIVIBRATORS
I 543	I1-05	DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUITS	36	32	40	37	
I 544	I1-06	DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUIT COMPONENTS	27	26	28	29	
I 545	I1-07	DO YOU REMOVE OR REPLACE COMPLETE WAVE GENERATING OR SHAPING CIRCUITS	41	41	40	43	
I 546	I1-08	DO YOU REMOVE OR REPLACE WAVE GENERATING OR SHAPING COMPONENTS	24	24	24	25	
I 547	I1-09	DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN LC TANK CIRCUITS	27	32	20	29	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
I	548	I1-10 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN RC NETWORKS	31	32	28	33	
I	549	I1-11 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN CRYSTALS	29	32	24	31	
I	550	I1-12 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN DON'T REMEMBER WHICH TYPE OF FDO	20	21	20	22	
I	551	I1-13 DO YOU WORK WITH ASTABLE MULTIVIBRATORS	31	32	28	33	
I	552	I1-14 DO YOU WORK WITH MONOSTABLE MULTIVIBRATORS	36	38	32	39	
I	553	I1-15 DO YOU WORK WITH BISTABLE MULTIVIBRATORS	34	35	32	37	
I	554	I1-16 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE MULTIVIBRATORS	10	6	16	10	
I	555	I2-01 DO YOU WORK WITH LIMITERS OR CLAMPERS IN YOUR PRESENT JOB	42	44	40	43	
I	556	I2-02 DO YOU WORK WITH SERIES DIODE LIMITERS	31	32	28	33	
I	557	I2-03 DO YOU WORK WITH SHUNT DIODE LIMITERS	32	32	32	35	LIMITERS AND CLAMPERS
I	558	I2-04 DO YOU WORK WITH LIMITERS WITH BIAS	29	32	24	33	
I	559	I2-05 DO YOU WORK WITH ZENER DIODE LIMITERS	34	35	32	37	
I	560	I2-06 DO YOU WORK WITH TRANSISTOR LIMITERS	32	35	28	35	
I	561	I2-07 DO YOU WORK WITH DON'T KNOW WHICH TYPE OF LIMITERS	15	21	8	16	
I	562	I2-08 DO YOU WORK WITH BASIC DIODE CLAMPING CIRCUITS	27	24	32	27	
I	563	I2-09 DO YOU WORK WITH DIODE CLAMPING CIRCUITS WITH BIAS	27	24	32	27	
I	564	I2-10 DO YOU WORK WITH DON'T KNOW WHICH TYPE OF CLAMPING CIRCUIT	20	26	12	20	
I	565	I3-01 IN YOUR PRESENT JOB, DO YOU WORK ON EQUIPMENT WHICH CONTAINS ELECTRON TUBES	12	12	12	14	
I	566	I3-02 DO YOU CHECK ELECTRON TUBES TO SEE IF THEY ARE GOOD	19	21	16	22	
I	567	I3-03 DO YOU USE TUBE TESTERS TO CHECK ELECTRON TUBES	10	12	8	12	ELECTRON TUBES
I	568	I3-04 DO YOU USE MULTIMETERS TO CHECK ELECTRON TUBES	14	18	8	16	
I	569	I3-05 DO YOU USE SCOPES TO CHECK ELECTRON TUBES	12	15	8	14	
I	570	I3-06 DO YOU USE SUBSTITUTION TO CHECK ELECTRON TUBES	14	15	12	16	
I	571	I3-07 DO YOU USE OR REFER TO CUTOFF	10	12	8	12	
I	572	I3-08 DO YOU USE OR REFER TO PEAK INVERSE VOLTAGE RATING	10	12	8	12	
I	573	I3-09 DO YOU USE OR REFER TO PEAK CURRENT RATING	10	12	8	12	
I	574	I3-10 DO YOU USE OR REFER TO TRANSIT TIME	8	9	8	10	
I	575	I3-11 DO YOU USE OR REFER TO PLATE DISSIPATION RATING	8	9	8	10	
I	576	I3-12 DO YOU USE OR REFER TO SATURATION	10	12	8	12	
I	577	I3-13 DO YOU USE OR REFER TO DC PLATE RESISTANCE	10	12	8	12	
I	578	I3-14 DO YOU COMPUTE ACTUAL VALUES OF THE DC PLATE RESISTANCE FOR ELECTRON TUBES	7	9	4	8	
I	579	I3-15 DO YOU USE OR REFER TO PLATE VOLTAGE	10	12	8	12	
I	580	I3-16 DO YOU USE OR REFER TO PLATE CURRENT	10	12	8	12	
I	581	I3-17 DO YOU USE OR REFER TO GRID VOLTAGE	10	12	8	12	
I	582	I3-18 DO YOU USE OR REFER TO GRID CURRENT	10	12	8	12	
I	583	I3-19 DO YOU USE OR REFER TO CATHODE VOLTAGE	10	12	8	12	
I	584	I3-20 DO YOU USE OR REFER TO CATHODE CURRENT	10	12	8	12	
I	585	I3-21 DO YOU USE OR REFER TO THE TRIODE AMPLIFICATION FACTOR (THE AMPLIFICATION FACTOR FOR TRIODES IS DEFINED AS THE RATIO OF CHANGE IN PLATE VOLTAGE TO A CHANGE IN GRID VOLTAGE)	5	6	4	6	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
I 586	J3-22	DO YOU CALCULATE ACTUAL VALUES OF TRIODE AMPLIFICATION FACTORS	3	3	4	4	
I 587	J3-23	DO YOU USE OR REFER TO MULTIGRID (TETRODE, PENTODE, ETC) AMPLIFICATION FACTORS	3	3	4	4	
I 584	J3-24	DO YOU USE OR REFER TO ELECTRON TUBE TRANSCONDUCTANCE (G, WHICH IS MEASURED IN MHOS)	3	3	4	4	
I 589	J3-25	DO YOU CALCULATE ACTUAL VALUES OF ELECTRON TUBE TRANSCONDUCTANCES	5	3	8	6	
I 590	J3-26	DO YOU USE OR REFER TO THE ELECTRON TUBE PARAMETER CALLED AC PLATE RESISTANCE	7	6	8	8	
I 591	J3-27	DO YOU CALCULATE ACTUAL VALUES OF AC PLATE RESISTANCE	3	3	4	4	
I 592	J3-28	DO YOU USE OR REFER TO ELECTRON TUBE INTERELECTRODE CAPACITANCE	7	6	8	8	
I 593	J3-29	DO YOU USE OR REFER TO CHARACTERISTIC CURVES IN YOUR WORK WITH ELECTRON TUBES	7	6	8	8	
I 594	J3-30	DO YOU USE CHARACTERISTIC CURVES TO SELECT PLATE VOLTAGE FOR A SPECIFIED BIAS	8	9	8	10	
I 595	J3-31	DO YOU USE CHARACTERISTIC CURVES TO SELECT PLATE CURRENT FOR A SPECIFIED BIAS	8	9	8	10	
I 596	J3-32	DO YOU USE CHARACTERISTIC CURVES TO SELECT BIAS REQUIRED FOR CUTOFF	8	9	8	10	
I 597	J3-33	DO YOU USE CHARACTERISTIC CURVES TO SELECT BIAS REQUIRED FOR SATURATION	8	9	8	10	
I 598	J3-34	DO YOU USE OR REFER TO ELECTRON TUBE AMPLIFIER GAIN	12	12	12	14	
I 599	J3-35	DO YOU USE OR REFER TO ELECTRON TUBE AMPLIFIER EFFICIENCY	12	12	12	14	
I 600	J3-36	DO YOU USE TEST TUBE CHECKERS TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN	5	3	8	6	
I 601	J3-37	DO YOU USE MULTIMETERS TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN	7	6	8	8	
I 602	J3-38	DO YOU USE OSCILLOSCOPES TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN	8	9	8	10	
I 603	J3-39	DO YOU USE CHARACTERISTIC CURVES TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN	8	9	8	10	
I 604	J3-40	DO YOU CALCULATE ANY ELECTRON TUBE CAPACITANCES SUCH AS INPUT CAPACITANCE	7	9	4	8	
I 605	J3-41	DO YOU USE OR REFER TO TUBE SOCKET NOTATION	10	12	8	12	
I 606	J3-42	DO YOU USE OR REFER TO PIN NUMBERING SYSTEMS	10	12	8	12	
I 607	J3-43	DO YOU USE OR REFER TO THE TYPE OF MATERIAL OR THE OPERATING TEMPERATURE OF THE EMITTING SURFACE IN THE ELECTRON TUBES YOU WORK ON	5	6	4	6	
I 608	J3-44	DO YOU USE OR REFER TO TUBE SUBSTITUTION MATERIAL SUCH AS MANUALS OR CHARTS	8	9	8	10	
J 609	J1-01	DO YOU WORK WITH ELECTRON TUBE AMPLIFIERS OR CIRCUITS IN YOUR PRESENT JOB	15	12	20	16	
J 610	J1-02	DO YOU DETERMINE THE CLASS OF OPERATION FOR ELECTRON TUBE AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER CIRCUITS	14	9	20	16	ELECTRON TUBE AMPLIFIERS AND CIRCUITS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
J 611	J1-03	DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS	8	6	12	10	
J 612	J1-04	DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS	7	6	8	8	
J 613	J1-05	DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED AMPLIFIERS	5	3	8	6	
J 614	J1-06	DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED AMPLIFIERS	5	3	8	6	
J 615	J1-07	DO YOU TROUBLESHOOT OR REPAIR DON'T KNOW WHICH TYPE OF AMPLIFIER	3	3	4	4	
J 616	J2-01	DO YOU WORK WITH GAS TUBES (HOT CATHODE OR COLD CATHODE)	8	6	12	10	
J 617	J2-02	DO YOU WORK WITH CATHODE-RAY TUBES	19	12	28	22	
J 618	J2-03	DO YOU USE OR REFER TO THE CHARACTERISTICS OF BEAM POWER TUBES	15	6	28	16	
J 619	J2-04	DO YOU TROUBLESHOOT OR REPAIR CIRCUITS IN WHICH BEAM POWER TUBES ARE USED	12	3	24	12	SPECIAL PURPOSE ELECTRON TUBES
J 620	J2-05	DO YOU USE OR REFER TO THE CHARACTERISTICS OF THYRATRONS	7	6	8	8	
J 621	J2-06	DO YOU TROUBLESHOOT OR REPAIR CIRCUITS IN WHICH THYRATRONS ARE USED	7	6	8	8	
J 622	J2-07	DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTRON GUNS OF CATHODE-RAY TUBES (CRT)	10	3	20	12	
J 623	J2-08	DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTROMAGNETIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES (CRT)	7	3	12	8	
J 624	J2-09	DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTROSTATIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES (CRT)	5	3	8	6	
J 625	J2-10	DO YOU USE OR REFER TO PHOSPHOR SCREENS	15	9	24	18	
J 626	J2-11	DO YOU USE OR REFER TO AQUADAG COATINGS	3	3	4	4	
J 627	J2-12	DO YOU USE OR REFER TO ELECTRON OPTICS	3	3	4	4	
J 628	J2-13	DO YOU USE OR REFER TO PERSISTENCE	14	9	20	16	
J 629	J2-14	DO YOU USE OR REFER TO DECAY TIMES	8	6	12	10	
J 630	J2-15	DO YOU USE OR REFER TO FLUORESCENCE	12	12	12	14	
J 631	J2-16	DO YOU USE OR REFER TO PHOSPHORESCENCE	7	9	4	8	
J 632	J3-01	DO YOU WORK ON TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB	95	91	100	94	
J 633	J3-02	DO YOU PERFORM TASKS ON FREQUENCY CONVERTERS	93	88	100	92	HETERODYNING, MODULATION, AND DEMODULATION
J 634	J3-03	DO YOU PERFORM TASKS ON FREQUENCY MIXERS	86	79	96	84	
J 635	J3-04	DO YOU USE OR REFER TO THE HETERODYNING OF SIGNALS IN YOUR WORK WITH TRANSMIT OR RECEIVE SYSTEMS	66	56	80	67	
J 636	J3-05	DO YOU PERFORM TASKS ON REACTANCE MODULATORS	34	29	40	35	
J 637	J3-06	DO YOU PERFORM TASKS ON MODULATED OSCILLATORS	58	50	68	61	
X 638	X1-01	DO YOU WORK ON AM TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB	15	24	4	14	
X 639	X1-02	DO YOU INSPECT AM TRANSMIT OR RECEIVE SYSTEMS	19	24	12	18	
X 640	X1-03	DO YOU CLEAN AM TRANSMIT OR RECEIVE SYSTEMS	19	24	12	18	AM SYSTEMS
X 641	X1-04	DO YOU ALIGN OR ADJUST AM TRANSMIT OR RECEIVE SYSTEMS	17	24	8	16	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
* 642	K1-05 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE SYSTEMS	17	24	8	16	
* 643	K1-06 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE COMPONENTS	15	18	12	14	
* 644	K1-07 DO YOU REMOVE OR REPLACE AM TRANSMIT OR RECEIVE SYSTEMS	17	24	8	16	
* 645	K1-08 DO YOU REMOVE OR REPLACE AM TRANSMIT OR RECEIVE COMPONENTS	14	18	8	12	
* 646	K1-09 DO YOU PERFORM TASKS ON RF OSCILLATORS	19	24	12	18	
* 647	K1-10 DO YOU PERFORM TASKS ON RF AMPLIFIERS	17	24	8	16	
* 648	K1-11 DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS	19	24	12	18	
* 649	K1-12 DO YOU PERFORM TASKS ON POWER AMPLIFIERS	15	21	8	16	
* 650	K1-13 DO YOU PERFORM TASKS ON LOCAL OSCILLATORS	17	24	8	16	
* 651	K1-14 DO YOU PERFORM TASKS ON IF AMPLIFIERS	17	24	8	16	
* 652	K1-15 DO YOU PERFORM TASKS ON DETECTORS	17	24	8	16	
* 653	K1-16 DO YOU PERFORM TASKS ON DON'T REMEMBER WHICH AM STAGE	8	9	8	10	
* 654	K1-17 DO YOU USE OR REFER TO AMPLITUDE STABILIZATION IN TRANSMITTERS	14	18	8	14	
* 655	K1-18 DO YOU USE OR REFER TO FREQUENCY STABILIZATION IN TRANSMITTERS	15	21	8	16	
* 656	K1-19 DO YOU USE OR REFER TO SENSITIVITY OF RECEIVERS	19	24	12	18	
* 657	K1-20 DO YOU USE OR REFER TO SELECTIVITY OF RECEIVERS	19	24	12	18	
* 658	K1-21 DO YOU USE OR REFER TO 2.D HARMONIC DISTORTION	14	15	12	14	
* 659	K1-22 DO YOU USE OR REFER TO BANDPASS DISTORTION	15	18	12	16	
* 660	K1-23 DO YOU USE OR REFER TO SQUARE LAW DISTORTION	10	12	8	12	
* 661	K1-24 DO YOU USE OR REFER TO CO-CHANNEL INTERFERENCE	10	12	8	12	
* 662	K1-25 DO YOU USE OR REFER TO IMAGE FREQUENCIES IN RECEIVERS	14	18	8	14	
* 663	K1-26 DO YOU USE OR REFER TO SIGNAL TO IMAGE RATIOS OR IMAGE REJECTION RATIOS	12	15	8	12	
* 664	K1-27 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH AM TRANSMITTER SCHEMATIC DIAGRAMS	12	15	8	12	
* 665	K1-28 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH AM RECEIVER SCHEMATIC DIAGRAMS	17	21	12	16	
* 666	K2-01 DO YOU WORK WITH FM TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB	98	97	100	100	
* 667	K2-02 DO YOU INSPECT FM TRANSMIT OR RECEIVE SYSTEMS	97	97	96	98	
* 668	K2-03 DO YOU CLEAN FM TRANSMIT OR RECEIVE SYSTEMS	90	94	84	90	FM SYSTEMS
* 669	K2-04 DO YOU ALIGN FM TRANSMIT OR RECEIVE SYSTEMS	98	97	100	100	
* 670	K2-05 DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE SYSTEMS	97	97	96	98	
* 671	K2-06 DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE COMPONENTS	81	82	80	82	
* 672	K2-07 DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE SYSTEMS	95	97	92	96	
* 673	K2-08 DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE COMPONENTS	83	79	88	84	
* 674	K2-09 DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS	81	82	80	82	
* 675	K2-10 DO YOU PERFORM TASKS ON FREQUENCY MULTIPLIERS	83	79	88	84	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
K 676	K2-11 DO YOU PERFORM TASKS ON DRIVERS (INTERMEDIATE AMPLIFIERS)	81	76	88	86	
K 677	K2-12 DO YOU PERFORM TASKS ON POWER AMPLIFIERS	90	85	96	92	
K 678	K2-13 DO YOU PERFORM TASKS ON RF AMPLIFIERS	92	88	96	92	
K 679	K2-14 DO YOU PERFORM TASKS ON FREQUENCY CONVERTERS	92	88	96	90	
K 680	K2-15 DO YOU PERFORM TASKS ON IF AMPLIFIERS	85	82	88	84	
K 681	K2-16 DO YOU PERFORM TASKS ON LIMITERS	64	68	60	71	
K 682	K2-17 DO YOU PERFORM TASKS ON FREQUENCY DISCRIMINATORS	68	68	68	71	
K 683	K2-18 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM TRANSMITTERS	83	85	80	80	
K 684	K2-19 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM RECEIVERS	86	88	84	84	
K 685	K3-01 DO YOU CONVERT DECIMAL (BASE 10) NUMBERS TO OCTAL (BASE 8) NUMBERS	20	26	12	20	
K 686	K3-02 DO YOU CONVERT DECIMAL NUMBERS TO BINARY (BASE 2) NUMBERS	24	29	16	24	NUMBERING SYSTEMS
K 687	K3-03 DO YOU CONVERT OCTAL NUMBERS TO DECIMAL NUMBERS	19	26	8	18	
K 688	K3-04 DO YOU CONVERT OCTAL NUMBERS TO BINARY NUMBERS	19	26	8	18	
K 689	K3-05 DO YOU CONVERT BINARY NUMBERS TO DECIMAL NUMBERS	24	29	16	24	
K 690	K3-06 DO YOU CONVERT BINARY NUMBERS TO OCTAL NUMBERS	19	26	8	18	
K 691	K3-07 DO YOU ADD BINARY NUMBERS TO GET A SUM	20	24	16	22	
K 692	K3-08 DO YOU SUBRRACT BINARY NUMBERS USING THE END-AROUND-CARRY METHOD	20	24	16	22	
K 693	K3-09 DO YOU SUBTRACT BINARY NUMBERS USING THE DIRECT SUBTRACTION METHOD	20	24	16	22	
K 694	K3-10 DO YOU ADD OCTAL NUMBERS TO GET A SUM	17	24	8	18	
L 695	L1-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO LOGIC FUNCTIONS	46	47	44	45	
L 696	L1-02 DO YOU CONSTRUCT TRUTH TABLES FOR AND LOGIC SYMBOLS OR GATES	19	21	16	20	
L 697	L1-03 DO YOU CONSTRUCT TRUTH TABLES FOR OR LOGIC SYMBOLS OR GATES	19	21	16	20	LOGIC FUNCTIONS
L 698	L1-04 DO YOU CONSTRUCT TRUTH TABLES FOR AND OR OR LOGIC SYMBOLS WITH STATE INDICATORS	19	21	16	20	
L 699	L1-05 DO YOU CONSTRUCT TRUTH TABLES FOR EXCLUSIVE OR LOGIC SYMBOLS OR GATES	15	21	8	18	
L 700	L1-06 DO YOU USE OR REFER TO TRUTH TABLES FOR AND LOGIC SYMBOLS OR GATES	24	26	20	24	
L 701	L1-07 DO YOU USE OR REFER TO TRUTH TABLES FOR OR LOGIC SYMBOLS OR GATES	24	26	20	24	
L 702	L1-08 DO YOU USE OR REFER TO TRUTH TABLES FOR AND OR OR LOGIC SYMBOLS WITH STATE INDICATORS	24	26	20	24	
L 703	L1-09 DO YOU USE OR REFER TO TRUTH TABLES FOR EXCLUSIVE OR LOGIC SYMBOLS	22	26	16	24	
L 704	L1-10 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR AND GATES	42	47	36	41	
L 705	L1-11 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR OR GATES	41	47	32	39	
L 706	L1-12 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR NAND OR NOR GATES	41	47	32	39	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
L 707	L1-13 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR EXCLUSIVE OR GATES	37	47	24	37	
L 708	L2-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO BOOLEAN EQUATIONS, LOGIC DIAGRAMS, OR LOGIC CIRCUITS	34	32	36	35	
L 709	L2-02 DO YOU DRAW LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUITS	8	15	0	10	BOOLEAN EQUATIONS
L 710	L2-03 DO YOU CONSTRUCT TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS	8	15	0	10	
L 711	L2-04 DO YOU DRAW LOGIC DIAGRAMS FROM GIVEN BOOLEAN EQUATIONS	10	18	0	12	
L 712	L2-05 DO YOU MEASURE INPUTS OR OUTPUTS OF LOGIC GATES	27	29	24	27	
L 713	L2-06 DO YOU DEVELOP OR ANALYZE BOOLEAN EQUATIONS IN THE PROCESS OF TROUBLESHOOTING DIGITAL CIRCUITS	12	18	4	12	
L 714	L2-07 DO YOU ANALYZE LOGIC CIRCUITS BY USING BOOLEAN ALGEBRA	12	18	4	14	
L 715	L2-08 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUIT GATES	17	21	12	18	
L 716	L2-09 DO YOU USE OR REFER TO TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS	8	15	0	10	
L 717	L2-10 DO YOU USE OR REFER TO LOGIC DIAGRAMS CONSISTING OF MORE THAN ONE GATE	29	32	24	31	
L 718	L2-11 DO YOU COMPUTE SUM AND CARRY EXPRESSIONS FOR SERIAL HALF OR FULL ADDER LOGIC DIAGRAMS	12	15	8	12	
L 719	L2-12 DO YOU TRACE DATA FLOW THROUGH PARALLEL FULL ADDER LOGIC DIAGRAMS	14	18	8	14	
L 720	L2-13 DO YOU WORK WITH ASTABLE (FREE RUNNING) MULTIVIBRATORS	27	32	20	29	
L 721	L2-14 DO YOU WORK WITH BISTABLE (FLIP-FLOP) MULTIVIBRATORS	32	32	32	33	
L 722	L2-15 DO YOU WORK WITH MONOSTABLE (ONE-SHOT) MULTIVIBRATORS	32	35	28	35	
L 723	L2-16 DO YOU USE OR REFER TO FLIP-FLOP MULTIVIBRATOR SYMBOLS	32	32	32	33	
L 724	L2-17 DO YOU USE OR REFER TO SINGLE-SHOT MULTIVIBRATOR SYMBOLS	31	32	28	33	
L 725	L2-18 DO YOU USE OR REFER TO FLIP-FLOP CIRCUIT DIAGRAMS	32	32	32	35	
L 726	L2-19 DO YOU USE OR REFER TO FLIP-FLOP TRUTH TABLES	22	26	16	24	
L 727	L2-20 DO YOU USE OR REFER TO COMPLEMENTED FLIP-FLOP LOGIC SYMBOLS	24	29	16	25	
L 728	L2-21 DO YOU USE OR REFER TO COMPLEMENTING FLIP-FLOP LOGIC SYMBOLS	24	29	16	25	
L 729	L2-22 DO YOU MEASURE OUTPUT WAVESHAPES OF LOGIC CIRCUITS	34	29	40	35	
L 730	L2-23 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTED FLIP-FLOP SCHEMATIC DIAGRAMS	27	26	28	27	
L 731	L2-24 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTING FLIP-FLOP SCHEMATIC DIAGRAMS	27	26	28	27	
L 732	L2-25 DO YOU CONSTRUCT TRUTH TABLES FOR J-K FLIP-FLOP LOGIC SYMBOLS	15	18	12	18	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
L 733	L3-01	DO YOU WORK WITH DIGITAL COUNTERS IN YOUR PRESENT JOB	42	41	44	47	
L 734	L3-02	DO YOU USE OR REFER TO UP-COUNTERS	37	38	36	41	COUNTERS
L 735	L3-03	DO YOU USE OR REFER TO DOWN-COUNTERS	32	32	32	37	
L 736	L3-04	DO YOU USE OR REFER TO SERIAL COUNTERS	32	38	24	35	
L 737	L3-05	DO YOU USE OR REFER TO PARALLEL COUNTERS	25	29	20	29	
L 738	L3-06	DO YOU USE OR REFER TO RING COUNTERS	24	29	16	27	
L 739	L3-07	DO YOU USE OR REFER TO DECADE COUNTERS	29	32	24	33	
L 740	L3-08	DO YOU USE OR REFER TO COUNT DETECT CIRCUITS	22	29	12	25	
L 741	L3-09	DO YOU USE OR REFER TO DOWN CLOCKS	32	38	24	37	
L 742	L3-10	DO YOU USE OR REFER TO UP CLOCKS	32	38	24	37	
L 743	L3-11	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF UP-COUNTERS HAVING COMPLEMENTED FLIP-FLOPS	24	29	16	27	
L 744	L3-12	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SERIAL UP- OR DOWN-COUNTERS HAVING COMPLEMENTING FLIP-FLOPS	22	29	12	25	
L 745	L3-13	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF DECADE COUNTERS	25	29	20	29	
L 746	L3-14	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF RING COUNTERS	24	29	16	27	
L 747	L3-15	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SERIAL UP-COUNTERS FEEDING A PARALLEL STORAGE REGISTER	20	26	12	24	
L 748	L3-16	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTERS	24	26	20	27	
L 749	L3-17	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPE OF COUNTERS	25	26	24	29	
L 750	L3-18	DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR UP-COUNTERS HAVING COMPLEMENTED FLIP-FLOPS	15	21	8	18	
L 751	L3-19	DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR SERIAL UP- OR DOWN-COUNTERS HAVING COMPLEMENTING FLIP-FLOPS	14	18	8	16	
L 752	L3-20	DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR SERIAL UP-COUNTERS FEEDING A PARALLEL STORAGE REGISTERS	12	15	8	14	
L 753	L3-21	DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR OTHER TYPES OF COUNTERS	17	21	12	20	
L 754	L3-22	DO YOU CONSTRUCT TRUTH TABLES FROM LOGIC DIAGRAMS OF DECADE COUNTERS	7	9	4	8	
L 755	L3-23	DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP IN RING COUNTERS FOR SPECIFIC INPUT PULSES	14	12	16	16	
L 756	L3-24	DO YOU DETERMINE THE APPROPRIATE AND GATE NECESSARY IN COUNT DETECT CIRCUITS TO INDICATE A REQUIRED COUNT	8	9	8	10	
M 757	M1-01	DO YOU WORK WITH SAWTOOTH WAVE GENERATORS	51	50	52	47	
M 758	M1-02	DO YOU WORK WITH TRAPEZOIDAL WAVE GENERATORS	34	35	32	35	
M 759	M1-03	DO YOU WORK WITH PULSED OSCILLATORS WITH REGENERATIVE FEEDBACK	42	35	52	41	TIMING CIRCUITS
M 760	M1-04	DO YOU WORK WITH PULSED OSCILLATORS WITHOUT REGENERATIVE FEEDBACK	42	38	48	45	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
M 761	M1-05 DO YOU WORK WITH BLOCKING OSCILLATORS	32	32	32	35	
M 762	M1-06 DO YOU USE OR REFER TO RISE TIME	54	50	60	55	
M 763	M1-07 DO YOU USE OR REFER TO FALL OR FLYBACK TIME	51	53	48	51	
M 764	M1-08 DO YOU USE OR REFER TO SWEEP TIME	64	62	68	65	
M 765	M1-09 DO YOU USE OR REFER TO ELECTRICAL LENGTH OF SAWTOOTH WAVEFORMS	51	47	56	51	
M 766	M1-10 DO YOU USE OR REFER TO PHYSICAL LENGTH OF SAWTOOTH WAVEFORMS	44	47	40	47	
M 767	M1-11 DO YOU USE OR REFER TO LINEAR SLOPE OF SAWTOOTH WAVEFORMS	44	44	44	45	
M 768	M1-12 DO YOU USE OR REFER TO GATE LENGTH OF SAWTOOTH WAVEFORMS	49	44	56	51	
M 769	M2-01 DO YOU USE SIGNAL GENERATORS IN YOUR PRESENT JOB	95	97	92	94	
M 770	M2-02 DO YOU PERFORM OPERATIONAL CHECKS WHILE USING SIGNAL GENERATORS	95	97	92	94	
M 771	M2-03 DO YOU PERFORM PERIODIC MAINTENANCE SUCH AS ADJUSTING, ALIGNING, OR CALIBRATING WHILE USING SIGNAL GENERATORS	76	79	72	78	USE OF SIGNAL GENERATORS
M 772	M2-04 DO YOU TROUBLESHOOT TO AN ASSEMBLY OR SUBASSEMBLY WHILE USING SIGNAL GENERATORS	75	79	68	76	
M 773	M2-05 DO YOU TROUBLESHOOT TO THE SMALLEST REPLACEABLE COMPONENT WHILE USING SIGNAL GENERATORS	34	38	28	35	
M 774	M2-06 DO YOU USE AUDIO SINE-WAVE GENERATORS	81	79	84	80	
M 775	M2-07 DO YOU USE AUDIO NON-SINUSOIDAL WAVE GENERATORS SUCH AS SQUARE WAVE, TRIANGLE, PULSE, OR SPIKE	56	65	44	55	
M 776	M2-08 DO YOU USE RF GENERATORS LESS THAN 1,000 MH	81	82	84	86	
M 777	M2-09 DO YOU USE RF GENERATORS GREATER THAN 1,000 MH	80	76	84	78	
M 778	M2-10 DO YOU USE OTHER SPECIAL PURPOSE OR MULTI-FUNCTION GENERATORS	76	71	84	80	
M 779	M3-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH ALTERNATING CURRENT OR DIRECT CURRENT MOTORS OR GENERATORS	56	53	60	59	
M 780	M3-02 DO YOU INSPECT MOTORS	58	53	64	61	MOTORS AND GENERATORS
M 781	M3-03 DO YOU CLEAN OR LUBRICATE MOTORS	56	50	64	59	
M 782	M3-04 DO YOU OPERATE MOTORS	56	50	64	59	
M 783	M3-05 DO YOU REMOVE OR REPLACE COMPLETE MOTORS	54	50	60	57	
M 784	M3-06 DO YOU REMOVE OR REPLACE MOTOR PARTS	29	29	28	33	
M 785	M3-07 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF MOTORS	54	47	64	59	
M 786	M3-08 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF MOTORS	25	29	20	27	
M 787	M3-09 DO YOU PERFORM ANY TASKS ON FIELD COILS	20	29	8	22	
M 788	M3-10 DO YOU PERFORM ANY TASKS ON ARMATURES	19	26	8	22	
M 789	M3-11 DO YOU PERFORM ANY TASKS ON ROTORS	20	29	8	24	
M 790	M3-12 DO YOU PERFORM ANY TASKS ON BRUSHES	29	32	24	33	
M 791	M3-13 DO YOU PERFORM ANY TASKS ON SLIP RINGS	24	29	16	27	
M 792	M3-14 DO YOU PERFORM ANY TASKS ON COMMUTATORS	24	32	12	27	
M 793	M3-15 DO YOU PERFORM ANY TASKS ON POLE PIECES	20	26	12	24	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
M	794	M3-16 DO YOU DETERMINE OR MEASURE THE MAGNITUDE OF THE FORCE OR TORQUE CREATED BY A MOTOR	17	12	24	20	
M	795	M3-17 DO YOU DETERMINE OR MEASURE THE DIRECTION OF THE MECHANICAL FORCE OR TORQUE CREATED BY A MOTOR	24	21	28	27	
M	796	M3-18 DO YOU DETERMINE OR MEASURE THE MAGNITUDE OR DIRECTION OF THE INDUCED VOLTAGE IN MOTORS	19	18	20	22	
M	797	M3-19 DO YOU WORK WITH SYNCHRONOUS MOTORS	37	32	44	43	
M	798	M3-20 DO YOU WORK WITH INDUCTION MOTORS	37	35	40	43	
M	799	M3-21 DO YOU WORK WITH SPLIT-PHASE MOTORS	27	24	32	27	
M	800	M3-22 DO YOU WORK WITH SOME COMBINATION OF THE ABOVE MOTORS	37	29	48	43	
M	801	M3-23 DO YOU INSPECT GENERATORS	36	41	28	39	
M	802	M3-24 DO YOU CLEAN OR LUBRICATE GENERATORS	25	32	16	27	
M	803	M3-25 DO YOU OPERATE GENERATORS	42	44	40	43	
M	804	M3-26 DO YOU REMOVE OR REPLACE COMPLETE GENERATORS	20	26	12	24	
M	805	M3-27 DO YOU REMOVE OR REPLACE GENERATOR PARTS	12	18	4	12	
M	806	M3-28 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF GENERATORS	29	38	16	31	
M	807	M3-29 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF GENERATORS	10	15	4	12	
N	808	N1-01 DO YOU WORK WITH METERS IN YOUR PRESENT JOB	86	82	92	90	
N	809	N1-02 DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF PERMANENT MAGNETS	29	29	28	29	METER MOVEMENTS
N	810	N1-03 DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF MOVING COILS	32	32	32	35	
N	811	N1-04 DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF SPIRAL SPRINGS	34	35	32	37	
N	812	N1-05 DO YOU READ METER SCALES	88	82	96	90	
N	813	N1-06 DO YOU EXTEND THE RANGE OF AMMETERS	53	56	48	51	
N	814	N1-07 DO YOU ZERO OHMMETERS	90	85	96	92	
N	815	N1-08 DO YOU ZERO AMMETERS	56	59	52	55	
N	816	N1-09 DO YOU EXTEND THE RANGE OF VOLTMETERS	66	65	68	67	
N	817	N1-10 DO YOU USE OR REFER TO VOLTMETER SENSITIVITY (EXPRESSED IN UNITS OF OHMS PER VOLT)	69	68	72	73	
N	818	N2-01 DO YOU WORK WITH SATURABLE REACTORS OR MAGNETIC AMPLIFIERS IN YOUR PRESENT JOB	20	18	24	22	
N	819	N2-02 DO YOU INSPECT MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	19	15	24	20	SATURABLE REACTORS AND MAGNETIC AMPLIFIERS
N	820	N2-03 DO YOU CLEAN MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	17	15	20	18	
N	821	N2-04 DO YOU ADJUST MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	15	12	20	16	
N	822	N2-05 DO YOU TROUBLESHOOT MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	15	12	20	16	
N	823	N2-06 DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	17	12	24	18	
N	824	N2-07 DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIER OR SATURABLE REACTOR COMPONENTS	10	9	12	12	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
N 825	N2-08	DO YOU USE OR REFER TO HYSTERESIS CURVES OR LOOPS	8	9	8	10	
N 826	N2-09	DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT WAVEFORMS ACROSS REACTOR WINDINGS OR LOAD RESISTORS OF SINGLE WINDING SATURABLE REACTORS	10	6	16	12	
N 827	N2-10	DO YOU MEASURE OUTPUT WAVEFORMS ACROSS REACTOR WINDINGS OR LOAD RESISTORS OF SINGLE WINDING SATURABLE REACTORS	14	9	20	14	
N 828	N2-11	DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT WAVEFORMS FOR MAGNETIC AMPLIFIERS	8	6	12	8	
N 829	N2-12	DO YOU USE OR REFER TO COERCIVE FORCE IN SATURABLE REACTORS	5	6	4	6	
N 830	N2-13	DO YOU USE OR REFER TO RESIDUAL MAGNETISM IN SATURABLE REACTORS	5	6	4	6	
N 831	N2-14	DO YOU USE OR REFER TO FLUX DENSITY IN SATURABLE REACTORS	10	9	12	12	
N 832	N2-15	DO YOU USE OR REFER TO POINT OF SATURATION IN SATURABLE REACTORS	12	6	20	12	
N 833	N2-16	DO YOU USE OR REFER TO SATURABLE REACTOR SCHEMATIC SYMBOLS	17	15	20	18	
N 834	N3-01	DO YOU WORK WITH WAVESHAPING CIRCUITS IN YOUR PRESENT JOB	54	47	64	55	
N 835	N3-02	DO YOU USE OR REFER TO TRANSIENT INTERVALS	41	24	64	43	WAVESHAPING
N 836	N3-03	DO YOU USE OR REFER TO PULSE WIDTH (PW)	46	32	64	47	CIRCUITS
N 837	N3-04	DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT)	39	29	52	39	
N 838	N3-05	DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY (PRF)	41	32	52	43	
N 839	N3-06	DO YOU USE OR REFER TO DIFFERENTIATING CIRCUITS	41	26	60	41	
N 840	N3-07	DO YOU USE OR REFER TO INTEGRATING CIRCUITS	47	38	60	47	
N 841	N3-08	DO YOU USE OR REFER TO THE CLASSIFICATION OF TIME CONSTANTS (TC) AS LONG, MEDIUM, OR SHORT	36	24	52	37	
N 842	N3-09	DO YOU DETERMINE WHETHER AN LR OR RC CIRCUIT IS DIFFERENTIATING OR INTEGRATING BASED ON THE TIME CONSTANT AND OUTPUT CONFIGURATION	19	15	24	22	
N 843	N3-10	DO YOU WORK WITH SQUARE WAVE GENERATORS	41	38	44	41	
N 844	N3-11	DO YOU WORK WITH RECTANGULAR WAVE GENERATORS	32	35	28	35	
O 845	O1-01	DO YOU WORK ON SINGLE SIDEBAND SYSTEMS IN YOUR PRESENT JOB	17	6	32	16	
O 846	O1-02	DO YOU INSPECT SSB TRANSMIT OR RECEIVE SYSTEMS	20	9	36	20	
O 847	O1-03	DO YOU CLEAN SSB TRANSMIT OR RECEIVE SYSTEMS	19	9	32	18	SINGLE SIDEBAND
O 848	O1-04	DO YOU ALIGN SSB TRANSMIT OR RECEIVE SYSTEMS	20	9	36	20	SYSTEMS
O 849	O1-05	DO YOU TROUBLESHOOT TO SSB TRANSMIT OR RECEIVE SYSTEMS	19	9	32	18	
O 850	O1-06	DO YOU TROUBLESHOOT TO SSB TRANSMIT OR RECEIVE COMPONENTS	19	9	32	18	
O 851	O1-07	DO YOU REMOVE OR REPLACE SSB TRANSMIT OR RECEIVE SYSTEMS	17	9	28	16	
O 852	O1-08	DO YOU REMOVE OR REPLACE SSB TRANSMIT OR RECEIVE COMPONENTS	19	9	32	18	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
0 853	01-09 DO YOU PERFORM TASKS ON SSB AUDIO AMPLIFIERS	15	6	28	14	
0 854	01-10 DO YOU PERFORM TASKS ON SSB BALANCED MODULATORS	15	6	28	14	
0 855	01-11 DO YOU PERFORM TASKS ON SSB CARRIER OSCILLATORS	17	9	28	16	
0 856	01-12 DO YOU PERFORM TASKS ON SSB LC FILTERS	14	6	24	14	
0 857	01-13 DO YOU PERFORM TASKS ON SSB CRYSTAL FILTERS	14	6	24	14	
0 858	01-14 DO YOU PERFORM TASKS ON SSB MECHANICAL FILTERS	14	6	24	12	
0 859	01-15 DO YOU PERFORM TASKS ON SSB OSCILLATORS	17	9	28	16	
0 860	01-16 DO YOU PERFORM TASKS ON SSB MIXERS	17	9	28	16	
0 861	01-17 DO YOU PERFORM TASKS ON SSB DRIVERS	17	9	28	16	
0 862	01-18 DO YOU PERFORM TASKS ON SSB POWER AMPLIFIERS	17	9	28	16	
0 863	01-19 DO YOU PERFORM TASKS ON SSB RF AMPLIFIERS	15	6	28	14	
0 864	01-20 DO YOU PERFORM TASKS ON SSB FREQUENCY CONVERTERS	15	6	28	14	
0 865	01-21 DO YOU PERFORM TASKS ON SSB IF AMPLIFIERS	15	6	28	14	
0 866	01-22 DO YOU PERFORM TASKS ON SSB DEMODULATORS	17	9	28	16	
0 867	01-23 DO YOU PERFORM TASKS ON SSB DON'T REMEMBER WHICH SSB SYSTEM STAGES	7	3	12	8	
0 868	01-24 DO YOU USE OR REFER TO SELECTIVE FADING	5	0	12	6	
0 869	01-25 DO YOU USE OR REFER TO PEAK POWER	10	0	24	10	
0 870	01-26 DO YOU USE OR REFER TO FREQUENCY STABILITY	15	6	28	14	
0 871	01-27 DO YOU USE OR REFER TO RESPONSE CURVES FOR BANDWIDTH FILTERS	12	3	24	12	
0 872	01-28 DO YOU CALCULATE PEAK POWER OR EFFECTIVE POWER OF SSB TRANSMITTERS	12	0	28	12	
0 873	01-29 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB TRANSMITTER SCHEMATIC DIAGRAMS	15	6	28	14	
0 874	01-30 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB RECEIVER SCHEMATIC DIAGRAMS	15	6	28	14	
0 875	02-01 DO YOU WORK ON PULSE MODULATION SYSTEMS IN YOUR PRESENT JOB	20	21	20	20	
0 876	02-02 DO YOU INSPECT PULSE MODULATION SYSTEMS	22	24	20	22	PULSE MODULATION
0 877	02-03 DO YOU CLEAN PULSE MODULATION SYSTEMS	22	24	20	22	SYSTEMS
0 878	02-04 DO YOU ALIGN PULSE MODULATION SYSTEMS	20	21	20	20	
0 879	02-05 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEMS	20	21	20	20	
0 880	02-06 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEM COMPONENTS	19	18	20	18	
0 881	02-07 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEMS	17	18	16	18	
0 882	02-08 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEM COMPONENTS	15	12	20	16	
0 883	02-09 DO YOU WORK ON PULSE-AMPLITUDE MODULATION (PAM) SYSTEMS	15	18	12	16	
0 884	02-10 DO YOU WORK ON PULSE-DURATION MODULATION (PDM) SYSTEMS	12	9	16	14	
0 885	02-11 DO YOU WORK ON PULSE-POSITION MODULATION (PPM) SYSTEMS	12	9	16	14	
0 886	02-12 DO YOU WORK ON PULSE-CODE MODULATION (PCM) SYSTEMS	17	15	20	18	
0 887	02-13 DO YOU WORK ON LINE PULSING MODULATION SYSTEMS	10	9	12	12	
0 888	02-14 DO YOU WORK ON DON'T REMEMBER WHICH TYPE OF MODULATION SYSTEM	14	15	12	12	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 176	SPC 177	SPC 178	SPC 179
0 889	02-15 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER SUPPLIES	19	18	20	18
0 890	02-16 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM CHARGING CHOKES AND CHARGING DIODES	12	12	12	12
0 891	02-17 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE FORMING NETWORKS	17	18	16	16
0 892	02-18 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TIMERS	17	18	16	16
0 893	02-19 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM SWITCHES SUCH AS GAS THYRATRONS	7	3	12	8
0 894	02-20 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE TRANSFORMERS	10	6	16	12
0 895	02-21 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TRANSMITTER TUBES	14	12	16	16
0 896	02-22 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM RF AMPLIFIERS	17	18	16	18
0 897	02-23 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM FREQUENCY CONVERTERS	19	18	20	20
0 898	02-24 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM IF AMPLIFIERS	17	18	16	18
0 899	02-25 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM DETECTORS	17	18	16	18
0 900	02-26 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM VIDEO AMPLIFIERS	10	12	8	12
0 901	02-27 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER VIDEO AMPLIFIERS	10	12	8	12
0 902	02-28 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM DON'T REMEMBER WHICH PULSE MODULATION SYSTEM STAGES	3	6	0	2
0 903	02-29 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY (PRF)	15	15	16	16
0 904	02-30 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT)	15	15	16	16
0 905	02-31 DO YOU USE OR REFER TO PULSE WIDTH (PW)	19	18	20	18
0 906	02-32 DO YOU USE OR REFER TO PULSE SHAPE	17	18	16	16
0 907	02-33 DO YOU USE OR REFER TO PEAK POWER	12	9	16	14
0 908	02-34 DO YOU USE OR REFER TO AVERAGE POWER	12	9	16	14
0 909	02-35 DO YOU CALCULATE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)	8	3	16	10
0 910	02-36 DO YOU MEASURE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)	8	3	16	10
0 911	02-37 DO YOU USE FORMULAS TO CALCULATE AVERAGE POWER OR PEAK POWER OF PULSE MODULATION TRANSMIT SYSTEMS	7	3	12	8
0 912	02-38 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION TRANSMITTER SCHEMATIC DIAGRAMS	10	9	12	10
0 913	02-39 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION RECEIVER SCHEMATIC DIAGRAMS	17	15	20	18
0 914	03-01 DO YOU WORK WITH ANTENNAS IN YOUR PRESENT JOB	90	85	96	96
0 915	03-02 DO YOU INSPECT ANTENNAS	73	68	80	76

ANTENNAS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179
0 916	03-03 DO YOU CLEAN ANTENNAS	69	62	80	73
0 917	03-04 DO YOU PHYSICALLY ALIGN ANTENNAS	56	44	72	61
0 918	03-05 DO YOU ELECTRICALLY ALIGN ANTENNAS	56	59	52	57
0 919	03-06 DO YOU TROUBLESHOOT TO ANTENNAS	73	68	80	78
0 920	03-07 DO YOU TROUBLESHOOT TO ANTENNA COMPONENTS	59	50	72	63
0 921	03-08 DO YOU REMOVE OR INSTALL ANTENNAS	37	32	44	41
0 922	03-09 DO YOU REMOVE OR REPLACE COMPONENTS OF ANTENNAS	51	44	60	55
0 923	03-10 DO YOU USE OR REFER TO TECHNICAL DATA CONTAINING REPRESENTATIONS OF E OR ELECTRIC FIELD LINES	31	24	40	31
0 924	03-11 DO YOU USE OR REFER TO TECHNICAL DATA CONTAINING REPRESENTATIONS OF H OR MAGNETIC FIELD LINES	29	21	40	29
0 925	03-12 DO YOU DETERMINE THE DIRECTION OF THE MAGNETIC LINES IN RELATION TO THE ELECTRIC LINES OF FORCE FOR ANTENNAS	24	18	32	25
0 926	03-13 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE OF CORRECT LENGTH (HALF-WAVE) ACT AS INDUCTIVE LOADS TO THE GENERATOR	17	18	16	20
0 927	03-14 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE LONGER THAN A HALF-WAVE ACT AS INDUCTIVE LOADS TO THE GENERATOR	17	18	16	20
0 928	03-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE SHORTER THAN A HALF-WAVE ACT AS CAPACITIVE LOADS TO THE GENERATOR	12	12	12	14
0 929	03-16 DO YOU WORK WITH HERTZ ANTENNAS	7	6	8	8
0 930	03-17 DO YOU WORK WITH MARCONI ANTENNAS	5	6	4	4
0 931	03-18 DO YOU WORK WITH BROADSIDE ARRAYS	3	3	4	4
0 932	03-19 DO YOU WORK WITH END-FIRE ARRAYS	5	6	4	6
0 933	03-20 DO YOU WORK WITH CARDIOID ARRAYS	3	3	4	4
0 934	03-21 DO YOU WORK WITH COLLINEAR ARRAYS	12	9	16	14
0 935	03-22 DO YOU USE OR REFER TO THE TERM ELECTROMAGNETIC INDUCTION FIELDS WHEN WORKING WITH ANTENNAS	15	18	12	16
0 936	03-23 DO YOU MEASURE ELECTROMAGNETIC INDUCTION FIELDS OF ANTENNAS	12	15	8	14
0 937	03-24 DO YOU USE OR REFER TO THE TERM ELECTROMAGNETIC RADIATION FIELDS WHEN WORKING WITH ANTENNAS	27	26	28	25
0 938	03-25 DO YOU MEASURE ELECTROMAGNETIC RADIATION FIELDS OF ANTENNAS	17	18	16	18
0 939	03-26 DO YOU USE OR REFER TO THE TIME PHASE OF ELECTRIC (E) AND MAGNETIC (H) COMPONENTS IN ANTENNA RADIATION	17	15	20	18
0 940	03-27 DO YOU USE OR REFER TO THE TIME PHASE OF ELECTRIC (E) AND MAGNETIC (H) COMPONENTS IN ANTENNA INDUCTION FIELD	15	15	16	16
0 941	03-28 ARE ANY OF THE ANTENNAS YOU WORK ON LINEARLY POLARIZED	17	21	12	20
0 942	03-29 ARE ANY OF THE ANTENNAS YOU WORK ON CIRCULARLY POLARIZED	71	65	80	73
0 943	03-30 DO YOU MEASURE OR DETERMINE THE POLARITY OF ANTENNAS YOU WORK ON	15	15	16	18
0 944	03-31 DO YOU CONSTRUCT, OR MAKE THE CALCULATIONS NECESSARY TO CONSTRUCT, ANTENNAS OF CORRECT LENGTH FOR SPECIFIC WAVELENGTHS	8	9	8	10

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
D 945	D3-32 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS	15	9	24	18	
D 946	D3-33 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS DIRECTORS	19	18	20	22	
D 947	D3-34 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS REFLECTORS	22	18	28	25	
D 948	D3-35 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN DON'T REMEMBER WHAT KIND OF ELEMENTS	25	29	20	25	
D 949	D3-36 DO YOU WORK ON UNIDIRECTIONAL ANTENNAS	59	56	64	61	
D 950	D3-37 DO YOU WORK ON BIDIRECTIONAL ANTENNAS	17	18	16	18	
D 951	D3-38 DO YOU WORK ON DON'T REMEMBER THE DIRECTIONALITY	14	15	12	14	
D 952	D3-39 DO YOU WORK WITH ROTAR ANTENNA ARRAYS	37	41	32	41	
P 953	P1-01 IN YOUR PRESENT JOB DO YOU WORK WITH TRANSMISSION LINES (TRANSMISSION LINES ARE DEFINED TO INCLUDE LEADS BETWEEN RECEIVERS AND ANTENNAS, TELEPHONE LEADS, AS WELL AS HIGH VOLTAGE POWER LINES, ETC. DO NOT CONSIDER WAVEGUIDES AS TRANSMISSION LINES	58	59	56	59	TRANSMISSION LINES
P 954	P1-02 DO YOU REFER TO OR USE COPPER LOSS OR I2R LOSS IN TRANSMISSION LINES	8	9	8	10	
P 955	P1-03 DO YOU REFER TO OR USE SKIN EFFECTS OF HIGH FREQUENCY CURRENTS IN TRANSMISSION LINES	20	12	32	20	
P 956	P1-04 DO YOU REFER TO OR USE RADIATION LOSS IN TRANSMISSION LINES	27	21	36	25	
P 957	P1-05 DO YOU USE OR REFER TO DIELECTRIC LOSS IN TRANSMISSION LINES	14	12	16	16	
P 958	P1-06 DO YOU USE OR REFER TO LEAKAGE LOSSES IN TRANSMISSION LINES	19	15	24	22	
P 959	P1-07 DO YOU WORK WITH TWISTED PAIR TRANSMISSION LINES	25	26	24	27	
P 960	P1-08 DO YOU WORK WITH TWIN LEAD TRANSMISSION LINES	25	24	28	29	
P 961	P1-09 DO YOU WORK WITH OPEN TWO-WIRE TRANSMISSION LINES	17	18	16	18	
P 962	P1-10 DO YOU WORK WITH FLEXIBLE COAXIAL CABLE TRANSMISSION LINES	56	56	56	57	
P 963	P1-11 DO YOU WORK WITH RIGID COAXIAL CABLE TRANSMISSION LINES	46	47	44	45	
P 964	P1-12 DO YOU TROUBLESHOOT TRANSMISSION LINES	51	50	52	53	
P 965	P1-13 DO YOU ANALYZE VOLTAGE OR CURRENT WAVEFORMS IN TRANSMISSION LINES TO DETERMINE THE TYPE OF TERMINATION (OPEN, SHORTED, CAPACITIVE, INDUCTIVE)	12	12	12	12	
P 966	P1-14 DO YOU SELECT APPROPRIATE TRANSMISSION LINES TERMINATIONS TO ACHIEVE DESIRED WAVEFORMS	17	18	16	18	
P 967	P1-15 DO YOU USE OR REFER TO SCHEMATIC SYMBOLS FOR LINE TERMINATIONS IN TERMS OF CIRCUIT TERMINATIONS	36	35	36	37	
P 968	P1-16 DO YOU MEASURE STANDING WAVE RATIOS (SWR) OF TRANSMISSION LINES	42	44	40	45	
P 969	P1-17 DO YOU CALCULATE STANDING WAVE RATIOS (SWR) OF TRANSMISSION LINES	22	21	24	24	
P 970	P1-18 DO YOU PERFORM THE CALCULATIONS NECESSARY TO DETERMINE THE IMPEDANCE AND LENGTH OF QUARTER - WAVELENGTH MATCHING TRANSFORMERS TO MATCH TRANSMISSION LINES TO LOADS	14	18	8	16	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
P 971	P1-19 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING MATCHING TRANSFORMERS	31	32	28	29	
P 972	P1-20 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING DELTA MATCHING	14	15	12	16	
P 973	P1-21 DO YOU SELECT THE TYPE OF TRANSMISSION LINE NEEDED FOR PARTICULAR JOBS WITHOUT REFERRING TO TECHNICAL DATA	12	15	8	14	
P 974	P1-22 DO YOU USE OR REFER TO THE TERM CHARACTERISTIC IMPEDANCE (ZO) OF TRANSMISSION LINES	25	24	28	29	
P 975	P1-23 DO YOU CALCULATE THE CHARACTERISTIC IMPEDANCE (ZO) OF TRANSMISSION LINES	10	9	12	12	
P 976	P1-24 DO YOU USE OR REFER TO THE TERM CUTOFF FREQUENCY OF TRANSMISSION LINES	14	12	16	14	
P 977	P1-25 DO YOU USE OR REFER TO THE TERM VELOCITY FACTOR (K) OF TRANSMISSION LINES	7	9	4	8	
P 978	P1-26 DO YOU COMPUTE THE ELECTRICAL LENGTH OF TRANSMISSION LINES FOR PARTICULAR FREQUENCIES	8	9	8	8	
P 979	P1-27 DO YOU CONSTRUCT TRANSMISSION LINES OF PARTICULAR ELECTRICAL LENGTH FOR GIVEN FREQUENCIES	3	3	4	4	
P 980	P1-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT AS THE FREQUENCY INCREASES AND THE PHYSICAL LENGTH OF TRANSMISSION LINES REMAIN CONSTANT, THE ELECTRICAL LENGTH INCREASES	5	6	4	6	
P 981	P1-29 DO YOU WORK WITH NONRESONANT (FLAT) TRANSMISSION LINES	15	12	20	16	
P 982	P1-30 DO YOU WORK WITH RESONANT TRANSMISSION LINES	20	21	20	22	
P 983	P1-31 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING STUB MATCHING	12	12	12	14	
P 984	P2-01 DO YOU WORK WITH WAVEGUIDES OR CAVITY RESONATORS IN YOUR PRESENT JOB	73	68	80	76	
P 985	P2-02 DO YOU INSPECT WAVEGUIDES OR CAVITY RESONATORS	66	62	72	69	WAVEGUIDES AND CAVITY RESONATORS
P 986	P2-03 DO YOU CLEAN WAVEGUIDES OR CAVITY RESONATORS	53	44	64	57	
P 987	P2-04 DO YOU BEND WAVEGUIDES OR CAVITY RESONATORS	20	26	12	24	
P 988	P2-05 DO YOU TWIST WAVEGUIDES OR CAVITY RESONATORS	20	26	12	24	
P 989	P2-06 DO YOU PRESSURIZE WAVEGUIDES OR CAVITY RESONATORS	59	47	76	61	
P 990	P2-07 DO YOU PURGE WAVEGUIDES OR CAVITY RESONATORS	47	38	60	47	
P 991	P2-08 DO YOU TROUBLESHOOT WAVEGUIDES OR CAVITY RESONATORS	49	44	56	51	
P 992	P2-09 DO YOU REMOVE OR INSTALL COMPLETE WAVEGUIDES	56	47	68	59	
P 993	P2-10 DO YOU REMOVE OR INSTALL WAVEGUIDE SECTIONS	59	50	72	63	
P 994	P2-11 DO YOU REMOVE OR INSTALL DUMMY LOADS	63	53	76	65	
P 995	P2-12 DO YOU REMOVE OR INSTALL E BENDS	49	38	64	51	
P 996	P2-13 DO YOU REMOVE OR INSTALL H BENDS	49	38	64	51	
P 997	P2-14 DO YOU REMOVE OR INSTALL OTHER BENDS	41	32	52	43	
P 998	P2-15 DO YOU REMOVE OR INSTALL CHOKE JOINTS	29	24	36	31	
P 999	P2-16 DO YOU REMOVE OR INSTALL ROTATING JOINTS	53	44	64	53	
P1000	P2-17 DO YOU REMOVE OR INSTALL DIRECTIONAL COUPLERS	59	53	68	61	
P1001	P2-18 DO YOU REMOVE OR INSTALL BIDIRECTIONAL COUPLERS	47	47	48	47	
P1002	P2-19 DO YOU USE OR REFER TO "A" WALL OF WAVEGUIDES	17	18	16	18	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179
P1003	P2-20 DO YOU USE OR REFER TO "B" WALL OF WAVEGUIDES	17	18	16	18
P1004	P2-21 DO YOU USE OR REFER TO CUTOFF FREQUENCY OF WAVEGUIDES	27	24	32	29
P1005	P2-22 DO YOU USE OR REFER TO FREQUENCY-DETERMINING WALL OF WAVEGUIDES	17	21	12	20
P1006	P2-23 DO YOU USE OR REFER TO POWER-DETERMINING WALL OF WAVEGUIDES	14	18	8	16
P1007	P2-24 DO YOU USE OR REFER TO ELECTRIC FIELD BOUNDARY CONDITIONS	17	15	20	20
P1008	P2-25 DO YOU USE OR REFER TO MAGNETIC FIELD BOUNDARY CONDITIONS	17	15	20	20
P1009	P2-26 DO YOU USE OR REFER TO DUPLEXER FIELD BOUNDARY CONDITIONS	15	15	16	18
P1010	P2-27 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST WAVEGUIDES ARE MADE WITH A "B" WALL SIZE OF .7 WAVELENGTHS OF THE OPERATING FREQUENCY	12	18	4	14
P1011	P2-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST "A" WALLS RANGE FROM .2 TO .5 WAVELENGTHS IN SIZE, WITH .35 USED AS AN AVERAGE	8	9	8	10
P1012	P2-29 ARE YOU CONCERNED WITH THE MATERIAL (SUCH AS BRASS) WHICH WAVEGUIDES ARE MADE OF	19	21	16	22
P1013	P2-30 DO YOU COMPUTE THE LENGTH OF A WAVEGUIDE FOR SPECIFIC INSTALLATION	14	9	20	16
P1014	P2-31 DO YOU USE THE RIGHT HAND RULE TO DETERMINE THE DIRECTION OF PROPAGATION, DIRECTION OF "E" FIELD, OR DIRECTION OF "H" FIELD IN WAVEGUIDES	22	21	24	24
P1015	P2-32 DO YOU USE OR REFER TO THE TIME PHASE OF PEAK "E" OR "H" LINES IN WAVEGUIDES	15	15	16	16
P1016	P2-33 DO YOU MEASURE THE TIME PHASE OF "E" OR "H" LINES IN WAVEGUIDES	10	12	8	10
P1017	P2-34 DO YOU USE OR REFER TO THE SPACE QUADRATURE OF "E" OR "H" LINES IN WAVEGUIDES	14	15	12	14
P1018	P2-35 ARE HIGH POWER PROBES USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	25	21	32	27
P1019	P2-36 ARE LOW POWER PROBES USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	22	21	24	24
P1020	P2-37 ARE LOOPS USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	20	21	20	24
P1021	P2-38 ARE APERTURES (WINDOWS OR IRISES) USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	42	35	52	43
P1022	P2-39 ARE DON'T REMEMBER THE KIND OF ENERGY COUPLING USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	24	29	16	24
P1023	P2-40 DO YOU DETERMINE WHERE PROBES SHOULD BE MOUNTED IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA	8	9	8	10
P1024	P2-41 DO YOU DETERMINE THE POSITIONING OF LOOPS IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA	7	9	4	8

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
P1025	P2-42 DO YOU DETERMINE THE POSITIONING OR SIZE OF APERTURES IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA	5	6	4	6	
P1026	P2-43 ARE CHOKE JOINTS USED IN WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	17	12	24	20	
P1027	P2-44 ARE ROTATING JOINTS USED IN WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	49	44	56	49	
P1028	P2-45 ARE DON'T REMEMBER THE KIND OF JOINTS USED IN WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	17	21	12	20	
P1029	P2-46 DO YOU TUNE CAVITY RESONATORS USING CAPACITIVE TUNING	19	18	20	22	
P1030	P2-47 DO YOU TUNE CAVITY RESONATORS USING INDUCTIVE TUNING	17	18	16	20	
P1031	P2-48 DO YOU TUNE CAVITY RESONATORS USING VOLUME TUNING	17	15	20	20	
P1032	P2-49 DO YOU TUNE CAVITY RESONATORS USING DON'T REMEMBER THE METHOD OF TUNING	12	12	12	12	
P1033	P2-50 DO YOU MEASURE THE FREQUENCY OF SIGNALS IN CAVITY RESONATORS	19	21	16	20	
P1034	P3-01 IN YOUR PRESENT JOB DO YOU WORK WITH KLYSTRONS, TRAVELING WAVE TUBES (TWT), PARAMETRIC AMPLIFIERS, OR MAGNETRONS	64	53	80	67	MICROWAVE AMPLIFIERS AND OSCILLATORS
P1035	P3-02 DO YOU USE OR REFER TO INTERELECTRODE CAPACITANCE	17	12	24	20	
P1036	P3-03 DO YOU USE OR REFER TO ELECTRON TRANSIT TIME	17	15	20	20	
P1037	P3-04 DO YOU USE OR REFER TO LEAD INDUCTANCE	22	18	28	25	
P1038	P3-05 DO YOU USE OR REFER TO RF LOSSES IN EXTERNAL CIRCUITRY	41	35	48	45	
P1039	P3-06 DO YOU USE OR REFER TO PRINCIPLE OF ELECTRON VELOCITY MODULATION	32	18	52	35	
P1040	P3-07 DO YOU USE OR REFER TO ELECTRON BUNCHING	39	32	48	39	
P1041	P3-08 DO YOU WORK WITH TWO-CAVITY KLYSTRONS	27	24	32	29	
P1042	P3-09 DO YOU WORK WITH THREE-CAVITY KLYSTRONS	29	32	24	33	
P1043	P3-10 DO YOU WORK WITH REFLEX KLYSTRONS	37	26	52	41	
P1044	P3-11 DO YOU WORK WITH TRAVELING-WAVE TUBES (TWT)	61	50	76	63	
P1045	P3-12 DO YOU WORK WITH NONDEGENERATIVE PARAMETRIC AMPLIFIERS	47	41	56	49	
P1046	P3-13 DO YOU WORK WITH UP-CONVERTER PARAMETRIC AMPLIFIERS	17	21	12	20	
P1047	P3-14 DO YOU WORK WITH MAGNETRONS	8	9	8	10	
P1048	P3-15 DO YOU INSPECT KLYSTRONS OR TWT	61	53	72	63	
P1049	P3-16 DO YOU CLEAN KLYSTRONS OR TWT	51	44	60	55	
P1050	P3-17 DO YOU TUNE KLYSTRONS OR TWT ELECTRICALLY	36	35	36	37	
P1051	P3-18 DO YOU TUNE KLYSTRONS OR TWT MECHANICALLY	53	44	64	55	
P1052	P3-19 DO YOU PERFORM OPERATIONAL CHECKS OF KLYSTRONS OR TWT	59	50	72	61	
P1053	P3-20 DO YOU TROUBLESHOOT KLYSTRONS OR TWT	54	47	64	59	
P1054	P3-21 DO YOU REMOVE OR REPLACE COMPLETE KLYSTRON OR TWT	63	53	76	65	
P1055	P3-22 DO YOU REMOVE OR REPLACE KLYSTRON OR TWT COMPONENTS	25	24	28	24	
P1056	P3-23 DO YOU INSPECT PARAMETRIC AMPLIFIERS	59	50	72	63	
P1057	P3-24 DO YOU CLEAN PARAMETRIC AMPLIFIERS	54	44	68	61	
P1058	P3-25 DO YOU ADJUST PARAMETRIC AMPLIFIERS	61	50	76	65	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179
P1059	P3-26 DO YOU TUNE PARAMETRIC AMPLIFIERS	59	50	72	63
P1060	P3-27 DO YOU PERFORM OPERATIONAL CHECKS OF PARAMETRIC AMPLIFIERS	58	50	68	63
P1061	P3-28 DO YOU TROUBLESHOOT PARAMETRIC AMPLIFIERS	59	50	72	63
P1062	P3-29 DO YOU REMOVE OR REPLACE COMPLETE PARAMETRIC AMPLIFIER	61	50	76	65
P1063	P3-30 DO YOU REMOVE OR REPLACE PARAMETRIC AMPLIFIER COMPONENTS	58	47	72	61
P1064	P3-31 DO YOU INSPECT MAGNETRONS	7	6	8	8
P1065	P3-32 DO YOU CLEAN MAGNETRONS	7	6	8	8
P1066	P3-33 DO YOU ADJUST MAGNETRONS	7	6	8	8
P1067	P3-34 DO YOU TUNE MAGNETRONS	7	6	8	8
P1068	P3-35 DO YOU PERFORM OPERATIONAL CHECKS OF MAGNETRONS	7	6	8	8
P1069	P3-36 DO YOU TROUBLESHOOT MAGNETRONS	7	6	8	8
P1070	P3-37 DO YOU REMOVE OR REPLACE COMPLETE MAGNETRON	7	6	8	8
P1071	P3-38 DO YOU REMOVE OR REPLACE MAGNETRON COMPONENTS	5	6	4	6
P1072	P3-39 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS COLLECTOR PLATES	27	26	28	29
P1073	P3-40 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATCHER CAVITIES	20	21	20	22
P1074	P3-41 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATCHER GRIDS	19	21	16	20
P1075	P3-42 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS FEEDBACK LOOPS	19	21	16	20
P1076	P3-43 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS DRIFT SPACES	14	15	12	14
P1077	P3-44 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS BUNCHER GRIDS	19	21	16	20
P1078	P3-45 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS BUNCHER CAVITIES	15	15	16	16
P1079	P3-46 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CONTROL GRIDS	20	21	20	22
P1080	P3-47 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATHODES	27	26	28	29
P1081	P3-48 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON REPELLER (REFLECTOR) PLATES	24	24	24	25
P1082	P3-49 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON GRIDS	24	24	24	25
P1083	P3-50 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON GRID CAVITY GAPS	19	18	20	20
P1084	P3-51 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON RESONANT CAVITIES	24	26	20	25
P1085	P3-52 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON MAGNETIC COUPLING LOOPS	19	18	20	20
P1086	P3-53 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON FILAMENTS	27	26	28	29
P1087	P3-54 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON CATHODES	27	26	28	29

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
P1088	P3-55 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON OUTPUT LEADS	25	24	28	27	
P1089	P3-56 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES FILAMENTS	53	47	60	53	
P1090	P3-57 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES CATHODES	51	44	60	51	
P1091	P3-58 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES MODULATOR GRIDS	32	26	40	33	
P1092	P3-59 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES ANODES	51	44	60	53	
P1093	P3-60 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES HELIXES	49	47	52	49	
P1094	P3-61 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES COLLECTORS	51	44	60	53	
P1095	P3-62 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES MAGNETS	49	44	56	51	
P1096	P3-63 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES ATTENUATORS	46	41	52	49	
P1097	P3-64 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER FERRITE CIRCULATORS	31	35	24	33	
P1098	P3-65 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER SIGNAL CAVITIES	31	32	28	31	
P1099	P3-66 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER IDLER CAVITIES	20	29	8	22	
P1100	P3-67 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER VARACTOR DIODES	53	41	68	57	
P1101	P3-68 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER FERRITE ISOLATORS	32	32	32	33	
P1102	P3-69 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER REVERSE-BIAS BATTERIES	19	21	16	18	
P1103	P3-70 DO YOU PERFORM TASKS ON ANODES	7	6	8	8	
P1104	P3-71 DO YOU PERFORM TASKS ON ANODE COOLING PINS	7	6	8	8	
P1105	P3-72 DO YOU PERFORM TASKS ON COUPLING LOOPS	7	6	8	8	
P1106	P3-73 DO YOU PERFORM TASKS ON HEATER LEADS	7	6	8	8	
P1107	P3-74 DO YOU PERFORM TASKS ON RESONANT CAVITIES	7	6	8	8	
P1108	P3-75 DO YOU PERFORM TASKS ON CATHODES	7	6	8	8	
P1109	P3-76 DO YOU PERFORM TASKS ON MAGNETS	7	6	8	8	
Q1110	Q1-01 DO YOU USE OR REFER TO STORAGE REGISTERS	19	21	16	18	
Q1111	Q1-02 DO YOU USE OR REFER TO SHIFT REGISTERS	22	21	24	22	
Q1112	Q1-03 DO YOU USE OR REFER TO LOGIC SYMBOLS OF SHIFT REGISTERS	22	21	24	22	REGISTERS
Q1113	Q1-04 DO YOU USE OR REFER TO LOGIC SYMBOLS OF STORAGE REGISTERS	19	21	16	18	
Q1114	Q1-05 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTERS	20	18	24	22	
Q1115	Q1-06 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPE OF REGISTERS	14	15	12	14	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 174	SPC 177	SPC 178	SPC 179	
01116	Q1-07 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP OF A SHIFT REGISTER AFTER A SPECIFIED NUMBER OF SHIFT PULSES HAVE PASSED	15	18	12	16	
01117	Q2-01 DO YOU WORK WITH DIGITAL COUNTERS, REGISTERS, OR STORAGE DEVICES IN YOUR PRESENT JOB	20	24	16	22	
01118	Q2-02 DO YOU USE OR REFER TO DELAY LINES	8	12	4	8	
01119	Q2-03 DO YOU USE OR REFER TO MAGNETIC CORES	0	0	0	0	STORAGE DEVICES
01120	Q2-04 DO YOU USE OR REFER TO MAGNETIC DRUMS	0	0	0	0	
01121	Q2-05 DO YOU USE OR REFER TO MAGNETIC TAPES	0	0	0	0	
01122	Q2-06 DO YOU USE OR REFER TO ACCESS TIME OR SPEED OR MEMORY SYSTEMS	2	0	4	2	
01123	Q2-07 DO YOU USE OR REFER TO WORD CAPACITY OF MEMORY SYSTEMS	3	3	4	2	
01124	Q2-08 DO YOU USE OR REFER TO VOLATILITY OF MEMORY SYSTEMS	2	0	4	2	
01125	Q2-09 DO YOU USE OR REFER TO LOGIC SYMBOL OF DELAY LINES	8	9	8	8	
01126	Q3-01 IN YOUR PRESENT JOB, DO YOU WORK WITH DIGITAL-TO-ANALOG (D/A) CONVERTERS, ANALOG-TO-DIGITAL (A/D) CONVERTERS, OR BINARY-TO-DECIMAL READOUT CONVERTERS	42	41	44	43	
01127	Q3-02 DO YOU COMPUTE OUTPUT VOLTAGES FOR ELECTROMECHANICAL DIGITAL-TO-ANALOG (D/A) CONVERTERS FOR GIVEN INPUT VOLTAGES	12	12	12	12	DIGITAL TO ANALOG CONVERTERS
01128	Q3-03 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE COUNT IN ELECTROMECHANICAL DIGITAL-TO-ANALOG (D/A) CONVERTERS IS DETERMINED BY ADDING THE DENOMINATORS OF THE RESISTORS	3	6	0	4	
01129	Q3-04 DO YOU COMPUTE ANALOG VOLTAGES FOR GIVEN BINARY COUNTS IN ELECTRONIC DIGITAL-TO-ANALOG (D/A) CONVERTERS	7	9	4	8	
01130	Q3-05 DO YOU PERFORM SAMPLE FUNCTION TASKS ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS	10	9	12	8	
01131	Q3-06 DO YOU PERFORM HOLD FUNCTION TASKS ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS	10	6	16	10	
01132	Q3-07 DO YOU PERFORM COMPARE FUNCTION TASKS ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS	10	9	12	8	
01133	Q3-08 DO YOU PERFORM DIGITIZE FUNCTION TASKS ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS	8	6	12	8	
01134	Q3-09 DO YOU PERFORM DON'T REMEMBER WHICH FUNCTION TASKS ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS	12	15	8	12	
01135	Q3-10 DO YOU USE OR REFER TO SAMPLE FUNCTION OF A/D CONVERTERS	12	15	8	10	
01136	Q3-11 DO YOU USE OR REFER TO HOLD FUNCTION OF A/D CONVERTERS	10	9	12	10	
01137	Q3-12 DO YOU USE OR REFER TO COMPARE FUNCTION OF A/D CONVERTERS	12	15	8	10	
01138	Q3-13 DO YOU USE OR REFER TO DIGITAL FUNCTION OF A/D CONVERTERS	19	12	28	20	
01139	Q3-14 DO YOU PERFORM ANY TASKS ON MECHANICAL ANALOG-TO-DIGITAL (A/D) CONVERTERS	12	15	8	14	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
R1140	R1-01 DO YOU WORK WITH PHANTASTRON CIRCUITRY IN YOUR PRESENT JOB	2	0	4	2	PHANTASTRONS
R1141	R2-01 IN YOUR PRESENT JOB DO YOU WORK WITH SCHMITT TRIGGER CIRCUITS	41	35	48	43	
R1142	R2-02 DO YOU TRACE DATA FLOW THROUGH SCHMITT TRIGGER SCHEMATIC DIAGRAMS	37	29	48	39	SCHMITT TRIGGERS
R1143	R2-03 DO YOU USE OR REFER TO SCHMITT TRIGGER LOGIC SYMBOLS	36	32	40	37	
R1144	R3-01 IN YOUR PRESENT JOB DO YOU FABRICATE MULTICONDUCTOR CABLES	46	44	48	51	CABLE FABRICATION
R1145	R3-02 DO YOU FABRICATE COAXIAL CABLES	64	59	72	69	
S1146	S1-01 IN YOUR PRESENT JOB DO YOU PERFORM ANY TASKS ON VISUAL READOUT SYSTEMS	41	44	36	43	
S1147	S1-02 DO YOU PERFORM ANY TASKS ON NIXIE LIGHTS OR NIXIE LIGHT DECODER SYSTEMS	22	24	20	25	INPUT/OUTPUT DEVICES
S1148	S1-03 DO YOU ANALYZE NIXIE LIGHT DECODER SYSTEMS USING BOOLEAN ALGEBRA	8	12	4	10	
S1149	S2-01 DO YOU WORK WITH PHOTO TUBES IN YOUR PRESENT JOB	10	18	0	12	PHOTO SENSITIVE DEVICES
S1150	S3-01 IN YOUR PRESENT JOB DO YOU WORK WITH CHOPPER CIRCUITS	15	12	20	18	
S1151	S3-02 DO YOU MEASURE EXCITATION FREQUENCIES	7	6	8	8	
S1152	S3-03 DO YOU MEASURE VOLTAGE-CURRENT PHASE RELATIONSHIPS	8	6	12	10	SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)
S1153	S3-04 DO YOU USE OR REFER TO EXCITATION FREQUENCIES	7	6	8	8	
S1154	S3-05 DO YOU USE OR REFER TO VOLTAGE-CURRENT PHASE RELATIONSHIPS	10	6	16	12	
S1155	S3-06 DO YOU USE SERVOS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	15	15	16	18	
S1156	S3-07 DO YOU USE DETECTORS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	14	15	12	16	
S1157	S3-08 DO YOU USE ERROR SIGNAL DEVICES IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	14	15	12	16	
S1158	S3-09 DO YOU USE COMPARISON CIRCUITS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	15	18	12	16	
T1159	T1-01 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH INFRARED SYSTEMS	0	0	0	0	
T1160	T1-02 DO YOU INSPECT INFRARED SYSTEMS	0	0	0	0	
T1161	T1-03 DO YOU CLEAN INFRARED SYSTEMS	0	0	0	0	INFRARED
T1162	T1-04 DO YOU ADJUST OR CALIBRATE INFRARED SYSTEMS	0	0	0	0	
T1163	T1-05 DO YOU OPERATE INFRARED SYSTEMS	0	0	0	0	
T1164	T1-06 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF INFRARED SYSTEMS	0	0	0	0	
T1165	T1-07 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF INFRARED SYSTEMS	0	0	0	0	
T1166	T1-08 DO YOU TROUBLESHOOT DOWN TO INFRARED SYSTEM COMPONENT PARTS	0	0	0	0	
T1167	T1-09 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF INFRARED SYSTEMS	0	0	0	0	
T1168	T1-10 DO YOU REMOVE OR REPLACE INFRARED SYSTEM COMPONENT PARTS	0	0	0	0	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
T1169	T1-11 DO YOU USE OR REFER TO FAR REGION	0	0	0	0	
T1170	T1-12 DO YOU USE OR REFER TO INTERMEDIATE REGION	0	0	0	0	
T1171	T1-13 DO YOU USE OR REFER TO NEAR REGION	0	0	0	0	
T1172	T1-14 DO YOU USE OR REFER TO MICRON	0	0	0	0	
T1173	T1-15 DO YOU USE OR REFER TO GRAY BODIES	0	0	0	0	
T1174	T1-16 DO YOU USE OR REFER TO BLACK BODIES	0	0	0	0	
T1175	T1-17 DO YOU USE OR REFER TO ABSORPTION	0	0	0	0	
T1176	T1-18 DO YOU USE OR REFER TO SCATTERING	0	0	0	0	
T1177	T1-19 DO YOU USE OR REFER TO ABSOLUTE ZERO	0	0	0	0	
T1178	T1-20 DO YOU PERFORM TASKS ON BLITZ	0	0	0	0	
T1179	T1-21 DO YOU PERFORM TASKS ON TARGET BUTTONS	0	0	0	0	
T1180	T1-22 DO YOU PERFORM TASKS ON ERECTOR LENSES	0	0	0	0	
T1181	T1-23 DO YOU PERFORM TASKS ON OCULAR LENSES	0	0	0	0	
T1182	T1-24 DO YOU PERFORM TASKS ON CORRECTION LENSES	0	0	0	0	
T1183	T1-25 DO YOU PERFORM TASKS ON FILTERS	0	0	0	0	
T1184	T1-26 DO YOU PERFORM TASKS ON SPHERICAL MIRRORS	0	0	0	0	
T1185	T1-27 DO YOU PERFORM TASKS ON PLANE MIRRORS	0	0	0	0	
T1186	T2-01 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH LASERS	0	0	0	0	
T1187	T2-02 DO YOU INSPECT LASER SYSTEMS	0	0	0	0	
T1188	T2-03 DO YOU CLEAN LASER SYSTEMS	0	0	0	0	LASERS
T1189	T2-04 DO YOU OPERATE LASER SYSTEMS	0	0	0	0	
T1190	T2-05 DO YOU OPERATE LASER SYSTEMS	0	0	0	0	
T1191	T2-06 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF LASER SYSTEMS	0	0	0	0	
T1192	T2-07 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF LASER SYSTEMS	0	0	0	0	
T1193	T2-08 DO YOU TROUBLESHOOT TO COMPONENT PARTS OF LASER SYSTEMS	0	0	0	0	
T1194	T2-09 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF LASER SYSTEMS	0	0	0	0	
T1195	T2-10 DO YOU REMOVE OR REPLACE COMPONENT PARTS OF LASER SYSTEMS	0	0	0	0	
T1196	T2-11 DO YOU USE OR REFER TO ANGSTROMS (A)	0	0	0	0	
T1197	T2-12 DO YOU USE OR REFER TO ELECTRON ENERGY LEVELS	0	0	0	0	
T1198	T2-13 DO YOU USE OR REFER TO GROUND STATE	0	0	0	0	
T1199	T2-14 DO YOU USE OR REFER TO EXCITED STATE	0	0	0	0	
T1200	T2-15 DO YOU USE OR REFER TO PACKET OF RADIATION	0	0	0	0	
T1201	T2-16 DO YOU USE OR REFER TO PHOTONS	0	0	0	0	
T1202	T2-17 DO YOU USE OR REFER TO SPONTANEOUS EMISSION	0	0	0	0	
T1203	T2-18 DO YOU USE OR REFER TO STIMULATED EMISSION	0	0	0	0	
T1204	T2-19 DO YOU USE OR REFER TO COHERENCE OR INCOHERENCE	0	0	0	0	
T1205	T2-20 DO YOU USE OR REFER TO INVERSION LEVEL	0	0	0	0	
T1206	T2-21 DO YOU USE OR REFER TO MONOCHROMATIC	0	0	0	0	
T1207	T2-22 DO YOU WORK WITH ACTIVE MATERIALS	0	0	0	0	
T1208	T2-23 DO YOU WORK WITH PUMPING SOURCES	0	0	0	0	
T1209	T2-24 DO YOU WORK WITH FULL SILVERED (100% REFLECTIVE) MIRRORS	0	0	0	0	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
T1210	T2-25 DO YOU WORK WITH HALF SILVERED (92% REFLECTIVE) MIRRORS	0	0	0	0	
T1211	T2-26 DO YOU WORK WITH HELICAL FLASHTUBES	0	0	0	0	
T1212	T2-27 DO YOU WORK WITH RUBY	0	0	0	0	
T1213	T2-28 DO YOU WORK WITH HELIUM-NEON	0	0	0	0	
T1214	T2-29 DO YOU WORK WITH HELIUM-XENON	0	0	0	0	
T1215	T2-30 DO YOU WORK WITH XENON	0	0	0	0	
T1216	T2-31 DO YOU WORK WITH CESIUM-HELIUM	2	3	0	2	
T1217	T2-32 DO YOU WORK WITH ARGON	0	0	0	0	
T1218	T2-33 DO YOU WORK WITH NEODYMIUM IN GLASS	0	0	0	0	
T1219	T2-34 DO YOU WORK WITH GALLIUM ARSENIDE	0	0	0	0	
T1220	T3-01 IN YOUR PRESENT JOB DO YOU WORK WITH DISPLAY TUBES, SUCH AS DIRECT VIEW STORAGE (DVST) OR MULTIPLE MODE STORAGE TUBES (MMST)	7	12	0	8	
T1221	T3-02 DO YOU INSPECT DVST OR MMST	7	12	0	8	DISPLAY TUBES
T1222	T3-03 DO YOU CLEAN DVST OR MMST	7	12	0	8	
T1223	T3-04 DO YOU ADJUST OR CALIBRATE DVST OR MMST	3	6	0	4	
T1224	T3-05 DO YOU OPERATE SYSTEMS THAT CONTAIN DVST OR MMST	7	12	0	8	
T1225	T3-06 DO YOU TROUBLESHOOT DVST OR MMST CIRCUITS	0	0	0	0	
T1226	T3-07 DO YOU REMOVE OR REPLACE DVST OR MMST TUBES FROM MAJOR ASSEMBLIES OR UNITS	0	0	0	0	
T1227	T3-08 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME THE VARIOUS ELEMENTS OF DVST	0	0	0	0	
T1228	T3-09 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME THE VARIOUS ELEMENTS OF MMST	0	0	0	0	
T1229	T3-10 DO YOU PERFORM TASKS ON FLOOD GUNS	2	3	0	2	
T1230	T3-11 DO YOU PERFORM TASKS ON WRITE GUNS	0	0	0	0	
T1231	T3-12 DO YOU PERFORM TASKS ON ATTACK GUNS	0	0	0	0	
T1232	T3-13 DO YOU PERFORM TASKS ON ERASE GUNS	2	3	0	2	
T1233	T3-14 DO YOU PERFORM TASKS ON STORAGE GRIDS	2	3	0	2	
U1234	U1-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY PROGRAMMING TASKS	0	0	0	0	
U1235	U1-02 DO YOU USE OR REFER TO DECIMAL SYSTEMS	2	3	0	2	PROGRAMMING
U1236	U1-03 DO YOU USE OR REFER TO PROGRAMS	2	3	0	2	
U1237	U1-04 DO YOU USE OR REFER TO HEXIDECIMAL SYSTEMS	2	3	0	2	
U1238	U1-05 DO YOU USE OR REFER TO 8-4-2-1 SYSTEMS	2	3	0	2	
U1239	U1-06 DO YOU USE OR REFER TO FOUR SYSTEMS	2	3	0	2	
U1240	U1-07 DO YOU USE OR REFER TO BINARY SYSTEMS	2	3	0	2	
U1241	U1-08 DO YOU USE OR REFER TO TIME-SHARING	2	3	0	2	
U1242	U1-09 DO YOU USE OR REFER TO DATA WORDS	2	3	0	2	
U1243	U1-10 DO YOU USE OR REFER TO ADDRESS WORDS	2	3	0	2	
U1244	U1-11 DO YOU USE OR REFER TO ADDRESS/SUBADDRESS	3	3	4	4	
U1245	U1-12 DO YOU USE OR REFER TO STEERING/INFORMATION	2	3	0	2	
U1246	U1-13 DO YOU USE OR REFER TO INFORMATION WORDS	2	3	0	2	
U1247	U1-14 DO YOU PERFORM TASKS ON SINGLE LEVEL PROGRAMMING	0	0	0	0	
U1248	U1-15 DO YOU PERFORM TASKS ON MULTI-LEVEL PROGRAMMING	0	0	0	0	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	
01249	01-16 DO YOU PERFORM TASKS ON INPUT DEVICES	2	3	0	2	
01250	01-17 DO YOU PERFORM TASKS ON STORAGE DEVICES	2	3	0	2	
01251	01-18 DO YOU PERFORM TASKS ON ARITHMETIC SECTIONS	2	3	0	2	
01252	01-19 DO YOU PERFORM TASKS ON CONTROL SECTIONS	3	3	4	4	
01253	01-20 DO YOU PERFORM TASKS ON OUTPUT DEVICES	3	3	4	4	
01254	01-21 DO YOU PERFORM TASKS ON POWER SUPPLIES	3	3	4	4	
01255	02-01 DO YOU USE DECIBELS TO EXPRESS AMPLIFICATION AND ATTENUATION	93	88	100	94	
01256	02-02 DO YOU USE LOGARITHMS TO COMPUTE OUTPUT POWER IN DECIBELS	47	44	52	47	DB AND POWER RATIOS
01257	02-03 DO YOU USE LOGARITHMS TO COMPUTE ATTENUATION IN DECIBELS	47	44	52	47	
01258	02-04 DUMMY TASK TO IDENTIFY INCUMBENTS WHO PERFORMED NO TASKS	0	0	0	0	

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COMMUNICATIONS ELECTRONICS SYSTEMS SPECIALIST AFSC 30456.(U)
SEP 77 T J O'CONNOR, H T WELCH

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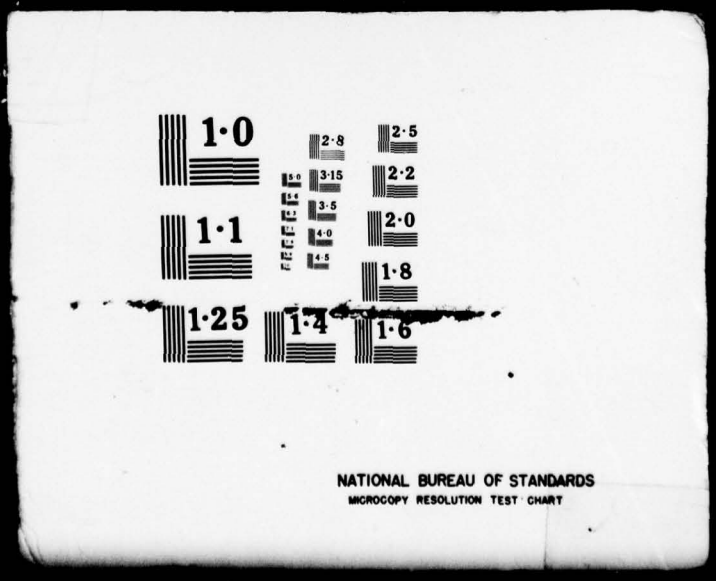

SUPPLEMENTARY

INFORMATION

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report summarizes the results of the administration of the Electronic Principles Inventory to airmen assigned as Communications Electronics Systems Specialist (AFSC 30456). The report gives a detailed listing of the technical tasks and knowledge needed to perform the jobs within the specialty or career ladder.

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This specialty has the following functions:

Analyzes data to determine spacecraft communications transponder operational readiness; calculates timing and orbital parameters for communications spacecraft acquisition and tracking; establishes a communications link with the distant earth terminal via the communications spacecraft; operates the earth terminal control console and continuously monitors the systems performance indicators; performs detailed repair and modification of earth terminal equipment; and implements earth terminal operation/maintenance activities in accordance with operational directives.